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Kodak

Kodak **DryView** 8100 Laser Imager

Service Manual, Rev. A

Revision History

Warnings and Cautions / Safety and Agency Compliance

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Section 2 – Installation

Section 3 – Adjustments

Section 4 – Disassembly/Reassembly

Section 5 – Tools/Preventive Maintenance

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74-0401-8699-6

Revision History

The original issue and revisions of this manual are identified as follows:

Issue date (Rev. A): 10/99

All pages are dated October, 1999.

Warnings and Cautions

Read and understand all instructions before using.

⚠ WARNING

This equipment is operated with hazardous voltage which can shock, burn, or cause death.

Remove wall plug before servicing equipment. Never pull on cord to remove from outlet. Grasp plug and pull to disconnect.

Do **not** operate equipment with a damaged power cord.

Do **not** use an extension cord to power this equipment.

Use only the power cord supplied with this equipment.

Position the power cord so it will not be tripped over or pulled.

Connect this equipment to a grounded outlet.

⚠ WARNING

For continued protection against fire, replace fuses only with fuses of the same type and fuse rating.

⚠ WARNING

This equipment contains moving parts that may be accessible to the user. Loose clothing, jewelry, or long hair may cause minor personal injury or damage to the equipment. Do not operate equipment with the covers open. Do not operate equipment with any of the safety interlocks overridden

⚠ WARNING

Not protected against ingress of liquids, including bodily fluids.

⚠ CAUTION

Do not use in the presence of flammable anesthetics, oxygen or nitrous oxide. This equipment dos not have a gas sealed electronics enclosure and could ignite any flammable or explosive gases present in its environment.

⚠ CAUTION

This equipment is intended to connect to other medical devices. Installation and service maintenance are to be performed only by qualified service personnel. The laser in the equipment is not a patient device. Therefore the equipment must be installed no closer than 1.8 meters from a patient bed or chair.

⚠ CAUTION

This equipment generates, uses, and can radiate radio frequency energy, and if not installed by qualified service personnel and used in accordance with the Operator's Guide, may cause interference to radio communications and other electronic devices. Operation of this equipment in a residential area may cause interference, in which case the user at their own expense will be required to take whatever measures may be required to correct the interference.

Read and understand all instructions before using.

⚠ CAUTION

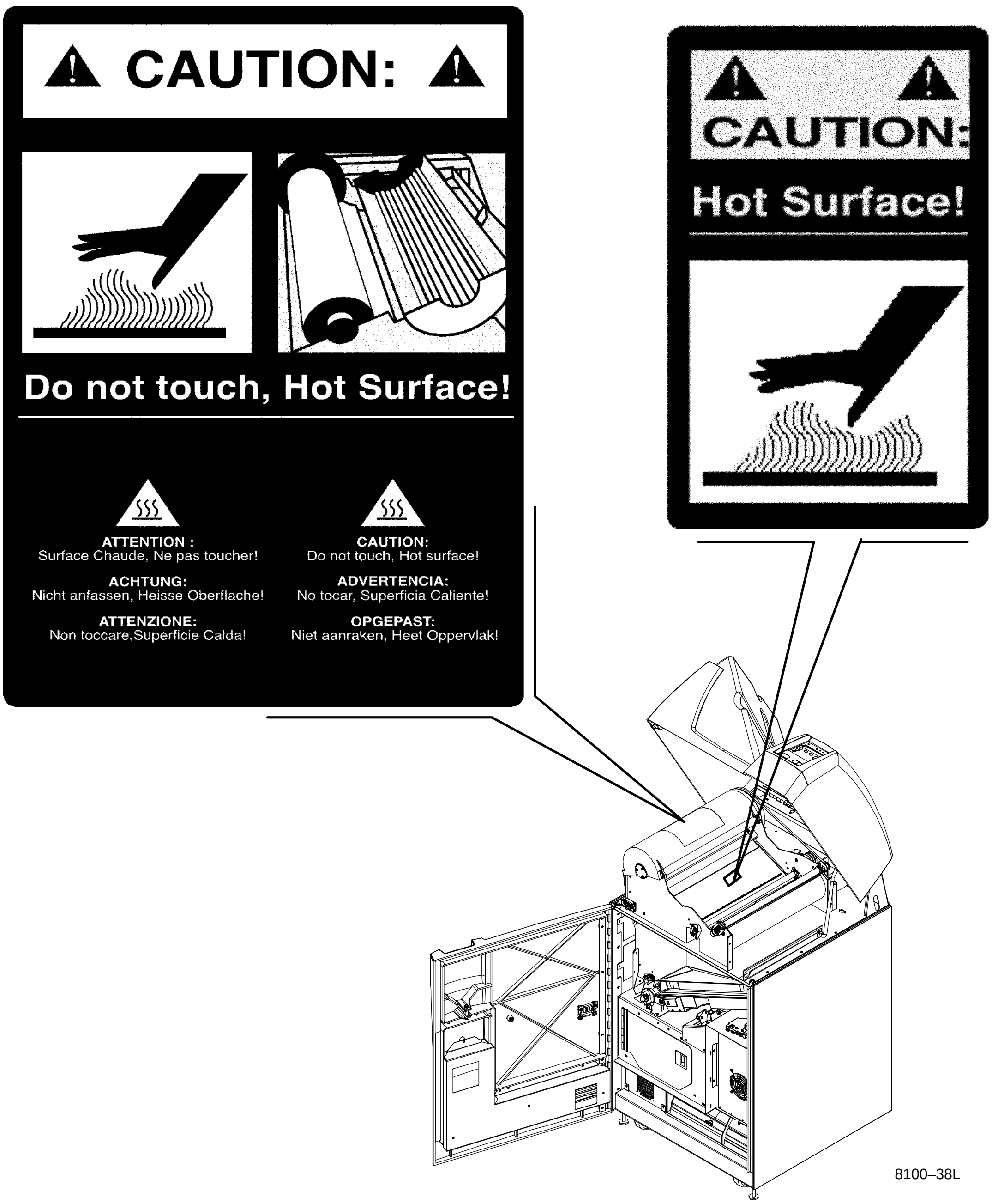
General External Cleaning. This equipment may be cleaned with a damp cloth using water with mild detergent, or commercial electronic equipment cleaner.

⚠ CAUTION

U.S. Federal law restricts this device to sale by or on the order of a licensed health care practitioner.

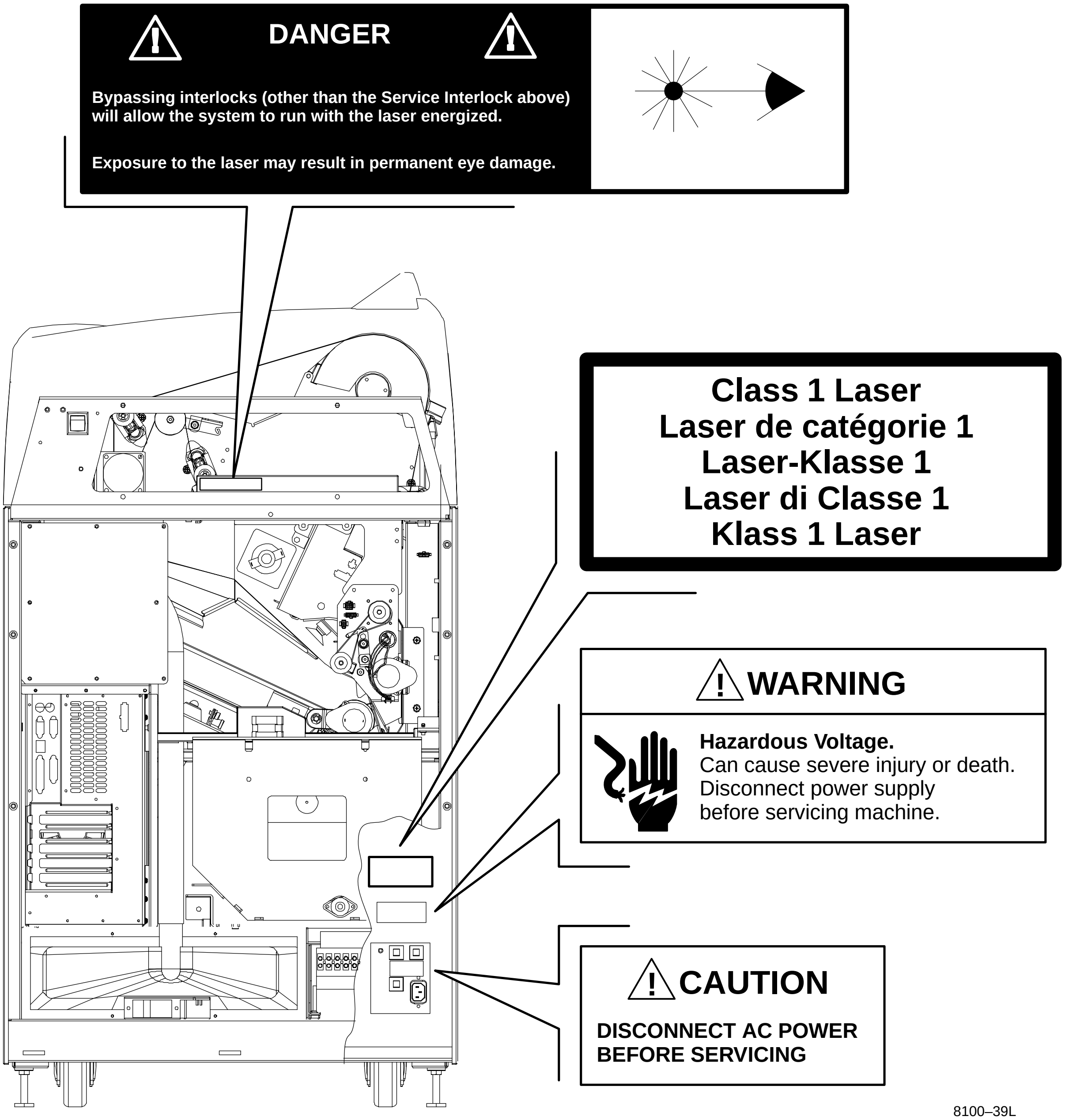
⚠ CAUTION

Do not substitute or modify any part of this equipment without approval of Eastman Kodak Company.



8100–38L

Read and understand all instructions before using.



8100–39L

Safety, Regulatory, EMC and CE Marking Compliance

All safety, regulatory, EMC and CE marking information may be found in the User Guide for this device.

Section 1 – Specifications

1-1. Dimensions

Height:	1168 mm (46 in.) – Top Cover closed 1581 mm (62-1/4 in.) – Top Cover open
Width:	635 mm (25 in.)
Depth:	660 mm (26 in.) – Front Door closed 1245 mm (49 in.) – Front Door open
Weight:	188 kg (414 lbs)

1-2. Electrical Power

Input Voltage:

Line-matching is accomplished by jumpers on the power transformer.

- 100 VAC ± 10%, 50/60 Hz ± 3
- 120 VAC ± 10%. 60 Hz ± 3
- 230 VAC ± 10%, 50 Hz ± 3

Input Current Draw:

- Less than 12 Amps at 100 VAC input voltage
- Less than 10 Amps at 120 VAC input voltage
- Less than 5.3 Amps at 230 VAC input voltage

Power Consumption: 700 watts maximum

1-3. Storage Environment

Temperature:	–35° to 60°C (–31° to 140°F)
Humidity:	10% to 90% RH, Noncondensing

1-4. Operating Environment

Temperature:	15° to 35°C (59° to 95°F)
Humidity:	15% to 85% RH, Noncondensing
Magnetic Field:	50 Gauss (maximum)

1-5. Environmental Effects

Heat Dissipation:	3000 BTU/Hr (average)
Acoustical Noise:	Less than 55 dB at one meter (less than 70 dB momentarily) Less than 80 dB, for non-repetitive tasks such as door open/close

1-6. Film Size

The 8100 will process 14 inch x 17 inch **DryView** Film.

1-7. Film Throughput

55 films per hour, assuming images of 1024 by 1024 pixels and a direct connect input

1-8. Image Input Options

Note
The **DryView** 8100 can accept input from only one image source at a time: either digital, analog, or DICOM.

Digital Interface (standard):

- 3M Protocol Standard
- One parallel RS-422 input
- Copper input cable, up to 60 meters long

Video Interface (optional):

- One RS-170 compatible input
- Real-time frame grab
- Interlaced or non-interlaced
- Input for optional external clock
- Copper input cable

Network Interface (optional):

- DICOM compliant
- Copper input cable

1-9. Control Source Options

Host Control:

- Use is dependent on modality source.
- RS232 or RS422 connection directly to the imager.
- Host can be located up to 60 meters (198 feet) from imager.

DryView 8100 Keypad:

- Available image formats include 1:1, 2:1, 4:1, 6:1, 9:1, 12:1, 15:1, 20:1 and 24:1.
- Images are acquired and stored in sequential order, from left to right and top to bottom.
- Can be located up to 60 meters (198 feet) from imager (copper cable).

DryView V2 Keypad:

- Available image formats include 1:1, 2:1, 4:1, 6:1, 9:1, 12:1, 15:1, 16:1 and 20:1.
- Images can be acquired and stored in random or sequential order.
- Can be located up to 3 meters (10 feet) from imager if connected directly.
- Can be located up to 60 meters (198 feet) from imager if a UKEIB is used (copper cable only).

1-10. Cables

- **DryView** 8100 Keypad:
  Plenum rated
  3 m (10 ft.) cable hard-wired to keypad
  Extenders: 10 m (33 ft.) 30 m (98 ft.), 60 m (197 ft.)
- **DryView** V2 keypad:
  Not plenum rated
  3 m (10 ft.)
- UKEIB: Plenum rated
  3 m (10 ft.), 10 m (33 ft.)
  30 m (98 ft.), 60 m (197 ft.)
- RS232: Not plenum rated
  15 ft., 25 ft., 50 ft.
  Host adapter cable
- Digital: Plenum rated
  3 m (10 ft.), 10 m (33 ft.)
  30 m (98 ft.), 60 m (197 ft.)
- Analog (video): Plenum rated
  3 m (10 ft.), 10 m (33 ft.)
  30 m (98 ft.), 60 m (197 ft.)
- Network (Ethernet 10BaseT)
  UTP cable, not plenum rated, 100 m (325 ft.) maximum
  STP cable, 3m (10 ft.)

1-11. Glossary

Following are definitions of abbreviations and technical terms used in this manual.

ACK Acknowledge – A hardware signal (response) that indicates reception of a signal.

A/D Analog to Digital – The conversion of an analog signal to digital format.

ADC Analog to Digital Converter – The hardware circuit that converts analog to digital format.

AIQC Automatic image Quality Control – The subsystem in the laser imager consisting of hardware and software that ensures consistent image quality.

API Application Programming Interface – The Library and Tools software that handles video parameters, and mediates differences between CHP file parameters and MIB video variables.

BOM Beginning of Message

Browser A computer program that accesses and displays information from the web. It contains multiple application programs, and uses an object's name (URL) to determine which application should be used to access the object.

Carrier Profile A term categorizing a subset of video parameters that describe the video signal itself as opposed to the image content carried on the video signal.

CGI Common Gateway Interface

CHP Common Hardware Profile – A term describing a set of video file parameters as implemented by the Video Board in the **DryView** 8100.

COM	Communications (Port)
CPU	Central Processing Unit – The microprocessing chip in a computer.
DAC	Digital to Analog Converter
DICOM	Diagnostic Imaging and Communications in Medicine
DLogE	Density versus the Log of Exposure
DMA	Direct Memory Access
Dmax	Maximum Density – Greatest possible image density, i.e., the density of the black step of the gray scale.
Dmin	Minimum Density – The measured density of film base plus fog. (Can be referenced either to the film or the image.)
DPatch	Density patch – A patch of density 1.0 on the top border of the film.
DUART	Dual Universal Asynchronous Receiver/Transmitter
ECC	Error Correction Code
EPROM	Erasable Programmable Read-Only Memory
EMC	Electromagnetic Characteristics
EOM	End of Message
EOT	End of Transmission
EU	European Union
FIFO	First In, First Out
FPGA	Field Programmable Gate Array
FRDONE	FIFO Read Done
FREAD	FIFO Read
FRGNT	FIFO Read Grant
FRR	FIFO Read Request
FTP	File Transfer Protocol
FWDONE	FIFO Write Done
FWGNT	FIFO Write Grant
FWR	FIFO Write Request
Gateway	A hardware device that links one network with another and translates data if the networks have different communication formats.
GSM	Gray Scale Manager
HPT	Host Protocol Translator
HTML	HyperText Markup Language – The source language used for documents on the web. It embeds commands that determine formatting along with the text to be displayed.
HTTP	HyperText Transport Protocol – The protocol used to transport a page from one host to another on the web.

H/W	Hardware
Hypertext	A set of documents in which the documents contain embedded references to other documents in their text.
Image Profile	A term categorizing a subset of video parameters that describe the image content of the video signal.
IMS	Image Management System – The **DryView** 8100 system that handles the acquisition and formatting of the image before passing it on to the MCS.
I/O	Input/Output
IP Address	Internet Protocol Address – The numeric address of a site on the network, e.g., 163.228.42.82. An IP address is actually a 32-bit binary number. For convenience, the number is expressed in *dotted decimal notation*, which expresses each 8-bit section of the 32 bit number as a decimal value, and uses periods to separate the four sections. For example: 10000001 00110100 00000110 00000000 (binary) is expressed in dotted decimal as 129 . 52 . 6 . 0.
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LUT	Lookup Table
MCS	Machine Control System – The **DryView** 8100 subsystem that controls the printing process.
MIB	Management Information Base – The software that handles image processing and formatting,
MPC	Maintenance Personal Computer
OMBC	Optics Module Control Board
PAL	Programmable Array Logic
PCI	Peripheral Component Interconnect
PCIO	Peripheral Component Input/Output
PLL	Phase-Locked Loop
PTADR	Pass-through Address
PTATN	Pass-through Attention
PTDONE	Pass-through Done
PTGNT	Pass-through Grant
RAM	Random Access Memory
RDFIFO	Read FIFO
REQ	Request
RET	Retransmit
RF	Radio Frequency
RSET	Register Set – The set of registers in the API Library software that stores video parameters.
RTD	Resistive Thermal Device

RXD	The “receive” signal line, as defined by the RS232 and RS422 communication specifications.
TFT	Transfer Function Table
TTL	Transistor to Transistor Logic
TXD	The “transmit” signal line, as defined by the RS232 and RS422 communication specifications.
SIB	Serial Interface Board
SMPTE	Society of Motion Picture and Television Engineers
SOL	Start of Line
SOS	Start of Scan
SSR	Solid State Relay
STP	Shielded Twisted Pair
Subnet Mask	A 32-bit value (in the format of an IP address) that specifies which bits of an IP address specify the host. For example: 255.255.0.0 masks the network portion of the address (255 = all 1’s). See IP Address for a description of address formats.
TCP/IP	Transmission Control Protocol/Internet Protocol
TPU	Time Processing Unit
UART	Universal Asynchronous Receiver Transmitter
UKEIB	Universal Keypad External Interface Box
URL	Uniform Resource Locator – A web address that locates a particular page on the web.
UTP	Unshielded Twisted Pair
WR	Write
WRFIFO	Write FIFO
WWW	World Wide Web

Section 2 – Installation

2-1. Checklist of Installation Procedures

Following is a checklist of the procedures required during a typical **DryView** 8100 installation:

❑ Unpacking and Initial Setup . . . . Paragraph 2-2
❑ Connecting Cables . . . . Paragraph 2-3
❑ Setting Jumpers on the Video Board (as needed) . . . . Paragraph 2-4
❑ Configuring the System: . . . . Paragraph 2-5

___1. Connecting the Service PC and Accessing MPC . . . . Paragraph 2-5-1
___2. Setting System Parameters . . . . Paragraph 2-5-2
___3. Setting Network (IP) Addresses . . . . Paragraph 2-5-3
___4. Setting Communications Parameters . . . . Paragraph 2-5-4
___5. Setting Digital <u>or</u> Video Parameters . . . . Paragraph 2-5-5 or 2-5-6
___6. Setting up Local Panel (language code, contrast and density) . . . . . . Paragraph 2-5-7
___7. Adjusting Image Quality (user ID, modality, aspect ratio, match borders) . . . . Paragraph 2-5-8
8. Validating Digital or Video Setup with the Customer . . . . Paragraph 2-5-9

❑ Entering Site Information (site address, contact, phone, etc.) . . . . Paragraph 2-6
❑ Installing the Quick Reference Guide Holder . . . . Paragraph 2-7
❑ Editing the Service History Log . . . . Paragraph 2-8
❑ Backing up the Configuration Settings . . . . Paragraph 2-9
❑ Training Operators

2-2. Unpacking and Initial Setup

Note

Paragraph 2-2-1 can be performed by dock personnel or by a Kodak-trained technician. The remainder of installation must be performed only by a Kodak-trained technician.

2-2-1. Opening the Shipping Crate

1. Remove the clamps that secure the front panel and the top panel of the shipping crate. Then remove the front panel and the top.
2. Install the front panel as a ramp, as follows (see Figure 2-1):
   a. Lay the front panel down in front of the crate.
   b. Unfold the small ramp at the top end of the front panel.
   c. Set the bottom of the front panel on the front edge of the crate. Align the holes in the panel with the holes in the crate.
   d. Use the two bolts stored underneath the **DryView** 8100 to secure the ramp to the crate.
3. Remove the foam and corrugated packing from the top of the **DryView** 8100.
4. Slowly pull the **DryView** 8100 out of the crate and ease it down the ramp.

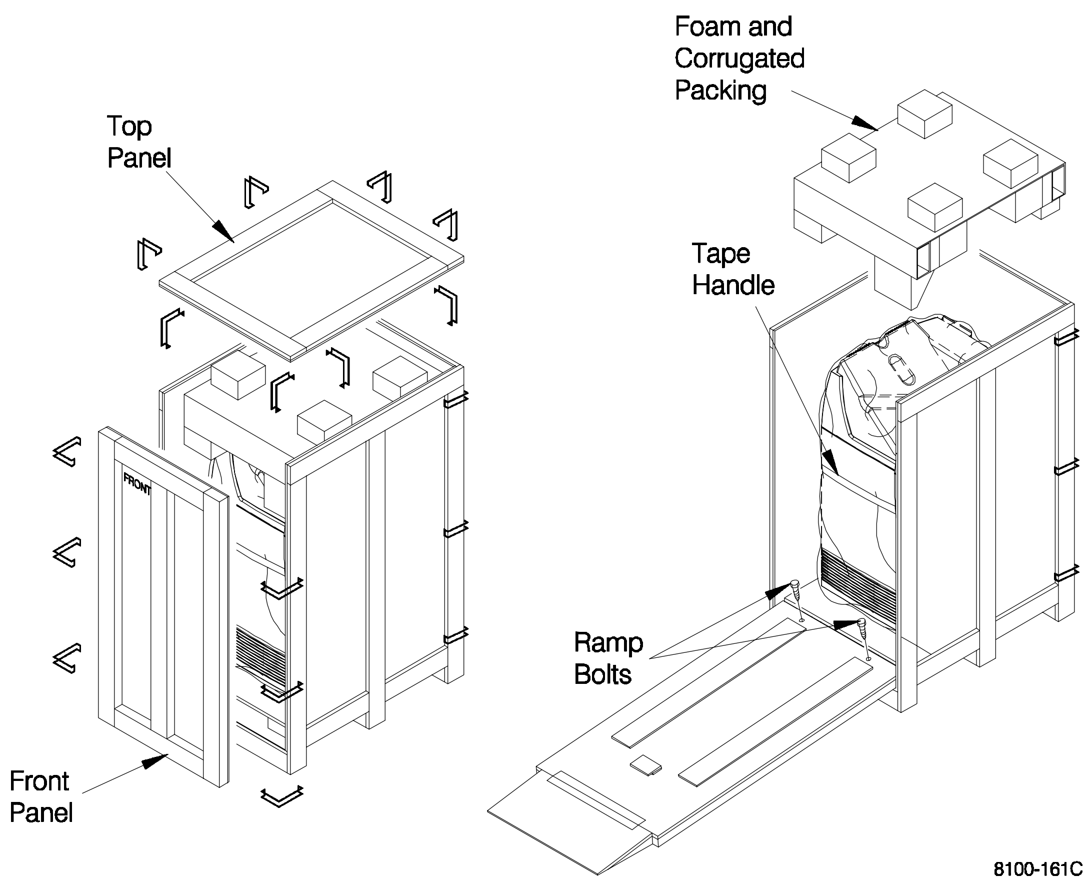


Figure 2-1. Removing the DryView 8100 from the Shipping Crate

5. Remove the filter from the crate.
6. Roll the **DryView** 8100 to the installation location.
7. Remove the plastic bag from the **DryView** 8100.
8. Set the **DryView** 8100 in the desired location and adjust the feet so they secure the **DryView** 8100 in place.

Note

Failure to adjust and secure the feet can result in image artifacts on film if the machine is disturbed during imaging.

Caution

To prevent damage to the **DryView** 8100, do not apply power and operate the machine until the internal packaging is removed.

2-2-2. Removing the Internal Packaging

Caution

The following procedures must be performed by a Kodak-trained technician.

1. Remove the rear panel of the **DryView** 8100.
2. Remove the two PVC tubes from below the platen assembly (see Figure 2-2). Discard the tubes.
3. Cut and remove the tie-wrap that holds the capstan for the optics translation motor away from the flywheel.
4. Remove the foam protecting the top and bottom of the flywheel.
5. Open the front door. Then unlatch and swing open the door to the exposure platen.
6. Remove the two screws securing the optics module to the front of the platen assembly.

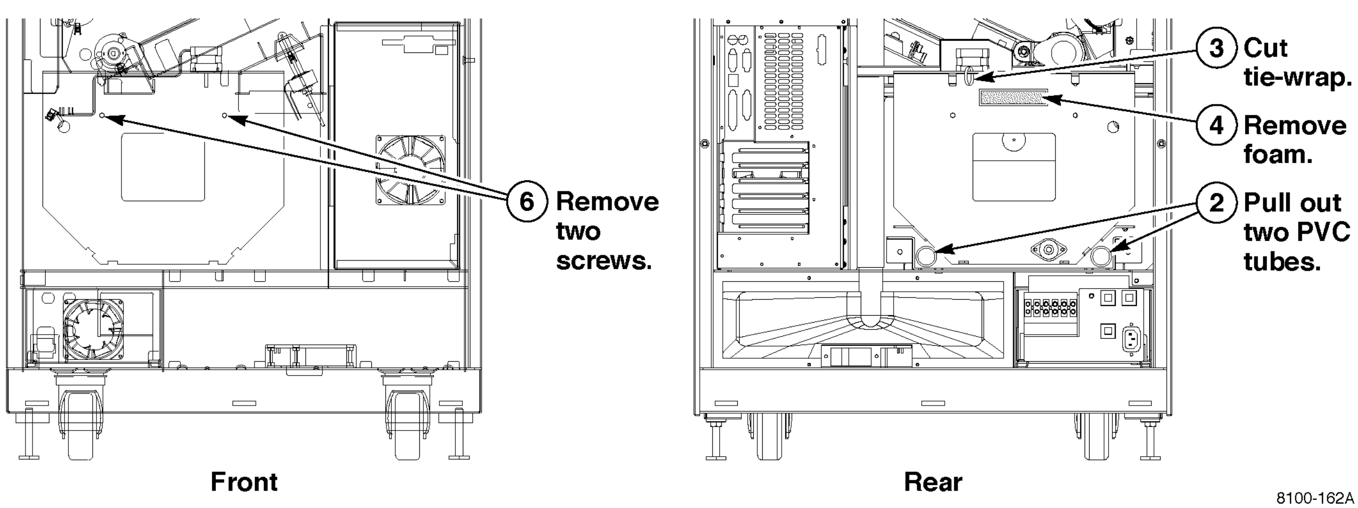


Figure 2-2. Removing the Internal Packaging

2-2-3. Preparing for Power Application

1. Check the wall power and set the power module jumper wires to match the measured wall power (see Figure 2-3).
2. Replace the rear panel of the **DryView** 8100.
3. Install the processor filter in the lower right front of the machine. Refer to the decal on the filter for installation instructions.
4. Connect the power cord to the **DryView** 8100 and to a power outlet.
5. Close the front door and the top hood.
6. Apply power to the **DryView** 8100.
7. Press the **Open Door** key on the Local Panel to open the front door.
8. Load film and close the front door.

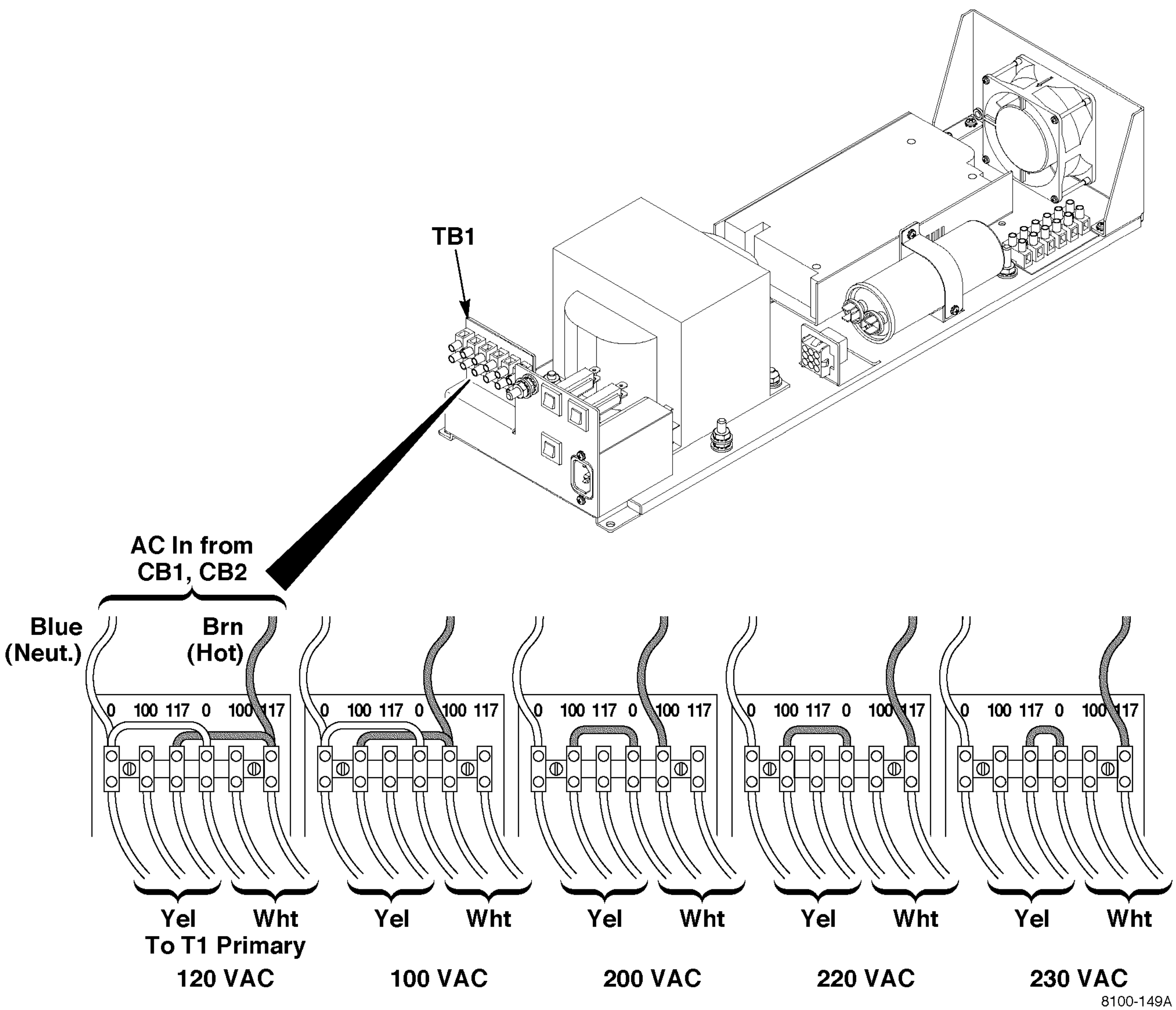


Figure 2-3. Positioning the Line-Matching Jumpers

2-3. Connecting Cables

Remove power from the machine before connecting any cables in the following procedures.

2-3-1. Digital Source to DryView 8100

If the **DryView** 8100 is to receive images from a digital modality, connect the cable between the **DryView** 8100 and the modality as shown in Figure 2-4.

2-3-2. Video Source to DryView 8100

If the **DryView** 8100 is to receive images from a video modality, connect the cable between the **DryView** 8100 and the modality as shown in Figure 2-5. If the setup uses a 2-wire cable, refer to Table 2-1 for connections. If the setup uses an octopus cable, refer to Table 2-2.

2-3-3. Host Controller to DryView 8100

If the modality includes a host controller, connect it as shown in Figure 2-6. (For Siemens and other modalites that require an HPT keypad, see paragraph 2-3-6.)

2-3-4. DryView V2 Keypad to DryView 8100

If a **DryView** V2 keypad is to be used, refer to Figure 2-7 for cable connections.

2-3-5. DryView 8100 Keypad to DryView 8100

If a **DryView** 8100 keypad is to be used, refer to Figure 2-8 for cable connections.

2-3-6. HPT Keypad to DryView 8100

For Siemens and other modalities that require an HPT(Host Protocol Translator) keypad, refer to Figures 2-9 and 2-10 for cable connections.

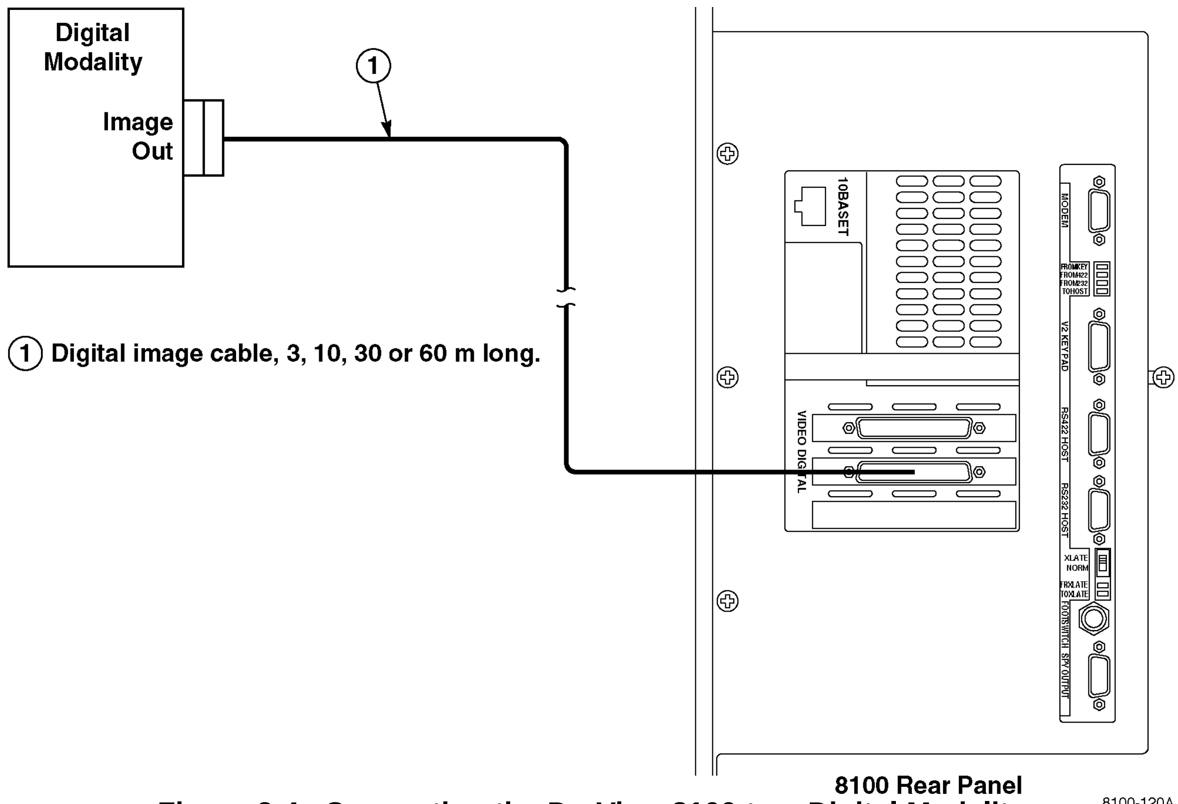


Figure 2-4. Connecting the DryView 8100 to a Digital Modality

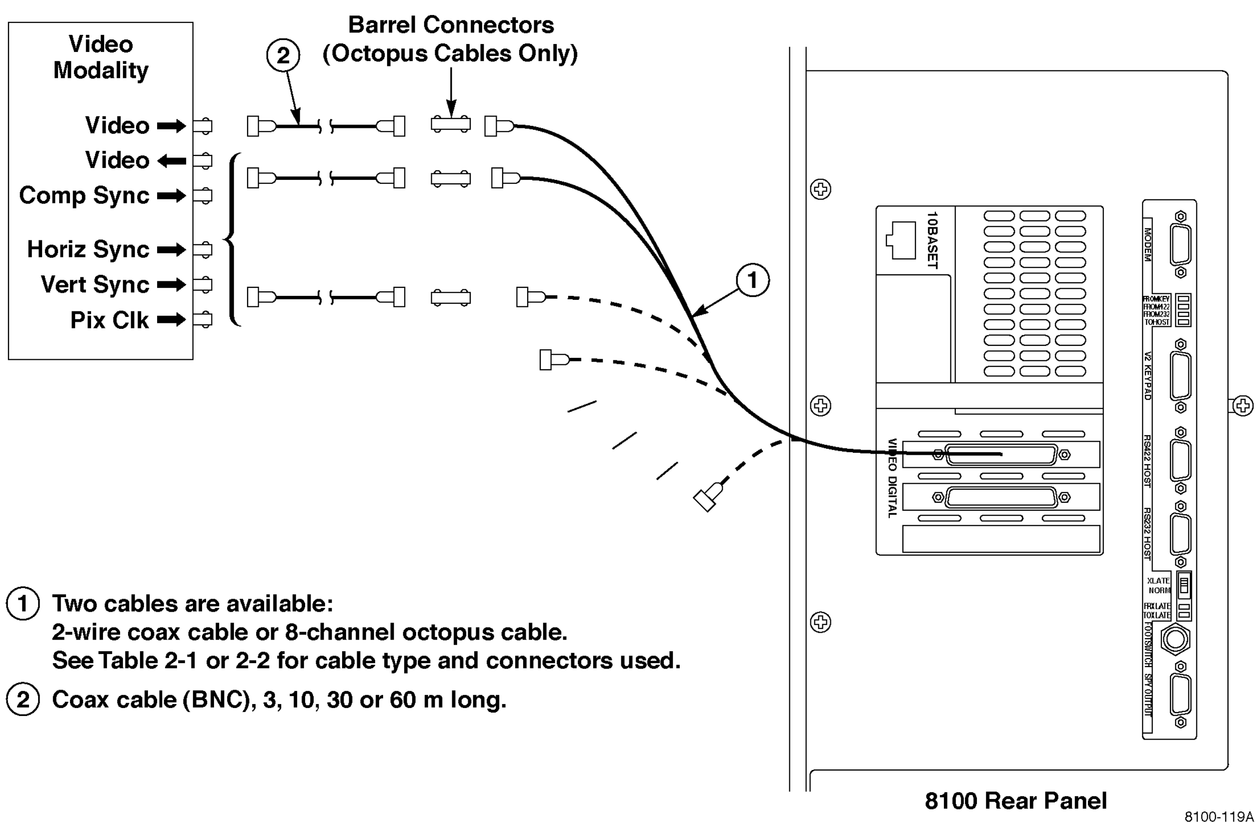


Figure 2-5. Connecting the DryView 8100 to a Video Modality

Table 2-1. Video Modality 2-Wire Cable Connections

Video Source	Video Board API Channel		2-Wire Cable Connections					
	Video	**Sync**	**Video In**	**Comp. Sync**	**Horiz. Sync**	**Vert. Sync**	**Video Out**	**Pixel Clk****
*Composite Video**	*CA3*	*CA3*	*Green*					*Red*
Composite Video (Passthrough)***	CA3	CA3	Green				Red	
Composite Sync	CA3	CT3	Green	Red				
Inverted Composite Sync	CA3	-CT3	Green	Red				

Note

* About 90% of video installations will use a composite video image source.

** The external pixel clock is optional. If it is not used, do not connect the cable. Use of the external pixel clock requires resetting video board jumpers. See paragraph 2-4.

*** Composite video with passthrough requires resetting video board jumpers. See paragraph 2-4.

Table 2-2. Video Modality Octopus Cable Connections

Video Source	Video Board API Channel		Octopus Cable Connections					
	Video	**Sync**	**Video In**	**Comp. Sync**	**Horiz. Sync**	**Vert. Sync**	**Video Out**	**Pixel Clk****
*Composite Video**	*CA3*	*CA3*	A3					T3
Composite Video (Passthrough)***	CA3	CA3	A3				T3	
Composite Video Pixel	CA2	CA2	A2				T2	T3
Composite Sync	CA3	CT3	A3	T3				
Composite Sync Pixel	CA3	CT2	A3	T2				T3
Inverted Composite Sync	CA3	-CT3	A3	T3				
Inverted Composite Sync Pixel	CA3	-CT2	A3	T2				T3
Separated Sync	CA3	SS	A3		T1	T2		T3
Separated Sync H Inverted	CA3	SS(-H)	A3		T1	T2		T3
Separated Sync V Inverted	CA3	SS(-V)	A3		T1	T2		T3
Separated Sync Both Inverted	CA3	-SS	A3		T1	T2		T3

Note

* About 90% of video installations will use a composite video image source.

** The external pixel clock is optional. If it is not used, do not connect the cable. Use of the external pixel clock requires resetting video board jumpers. See paragraph 2-4.

*** Composite video with passthrough requires resetting video board jumpers. See paragraph 2-4.

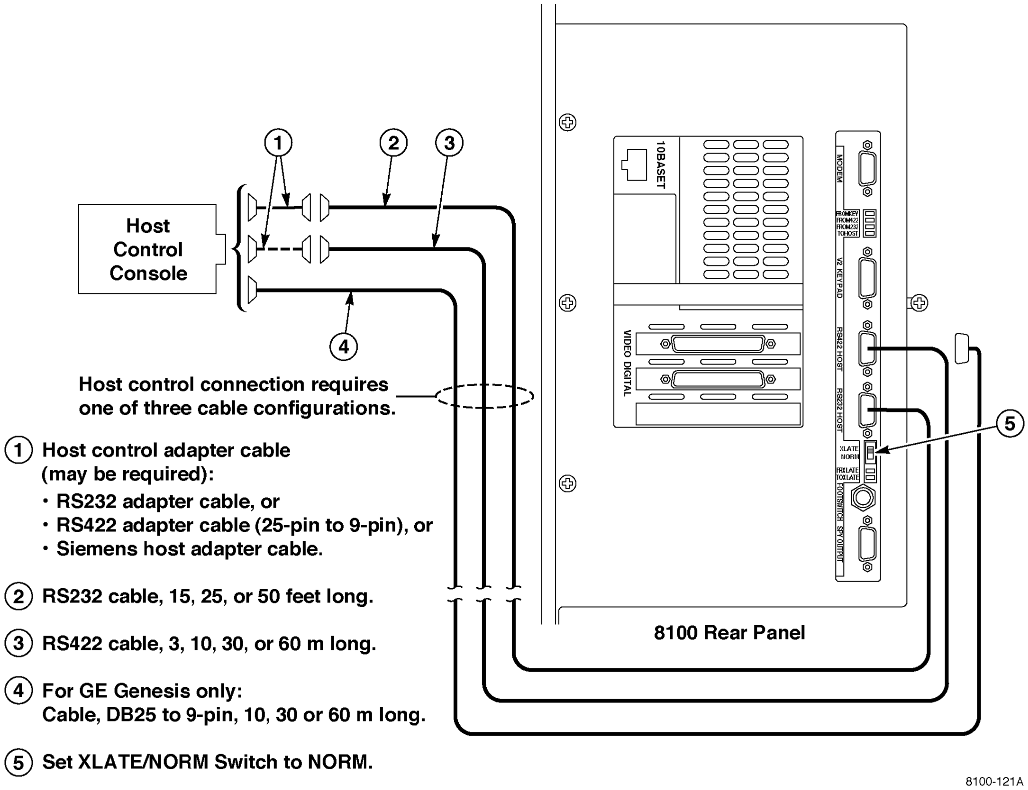


Figure 2-6. Connecting a Host Control Console to the DryView 8100

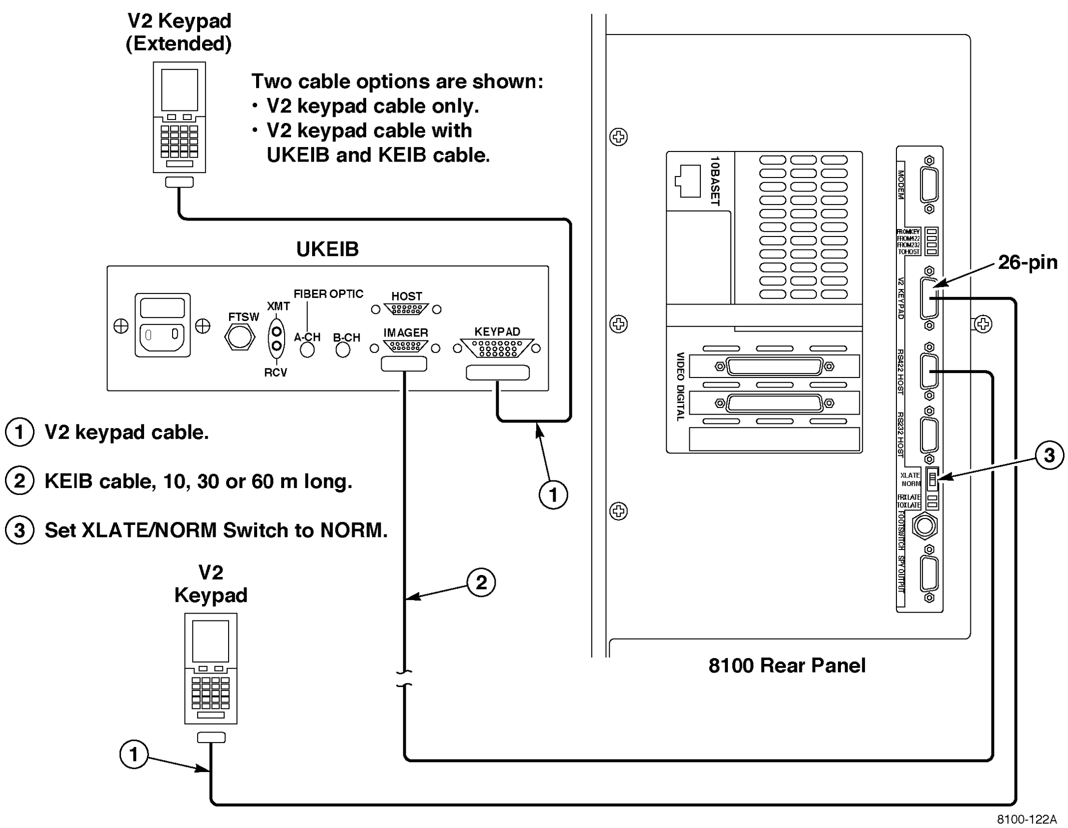


Figure 2-7. Connecting a DryView V2 Keypad to the DryView 8100

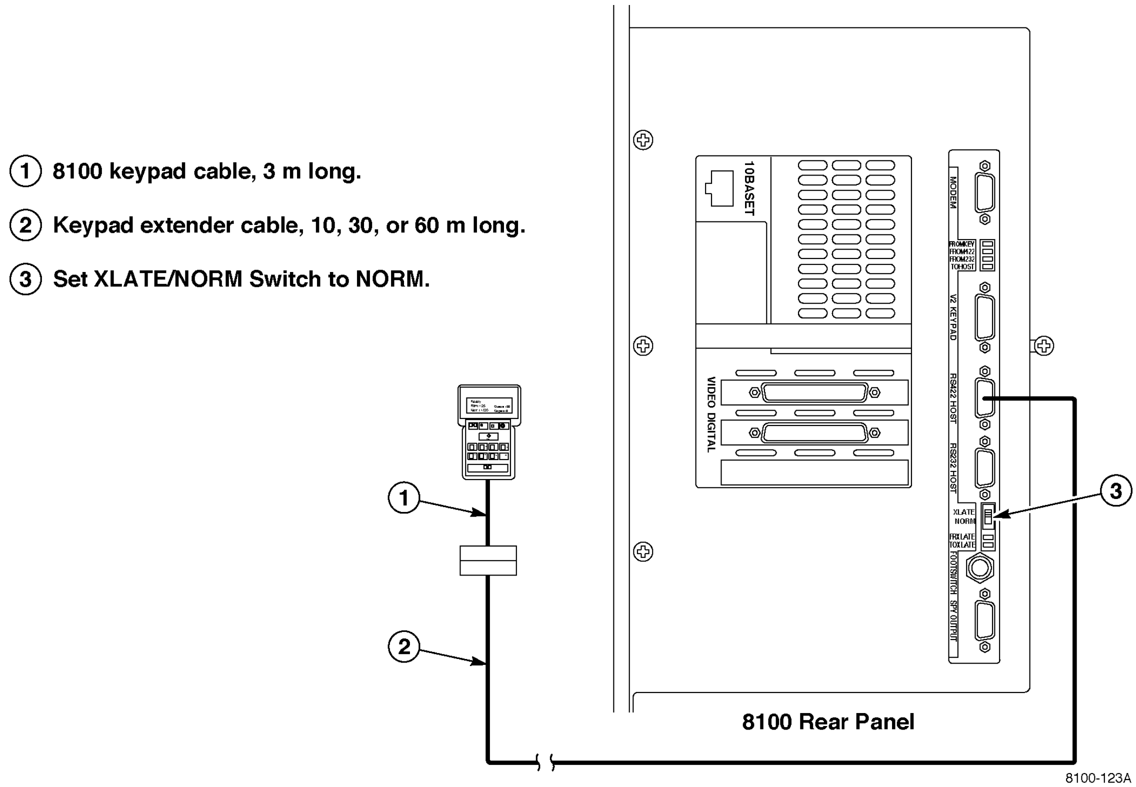


Figure 2-8. Connecting a DryView 8100 Keypad to the DryView 8100

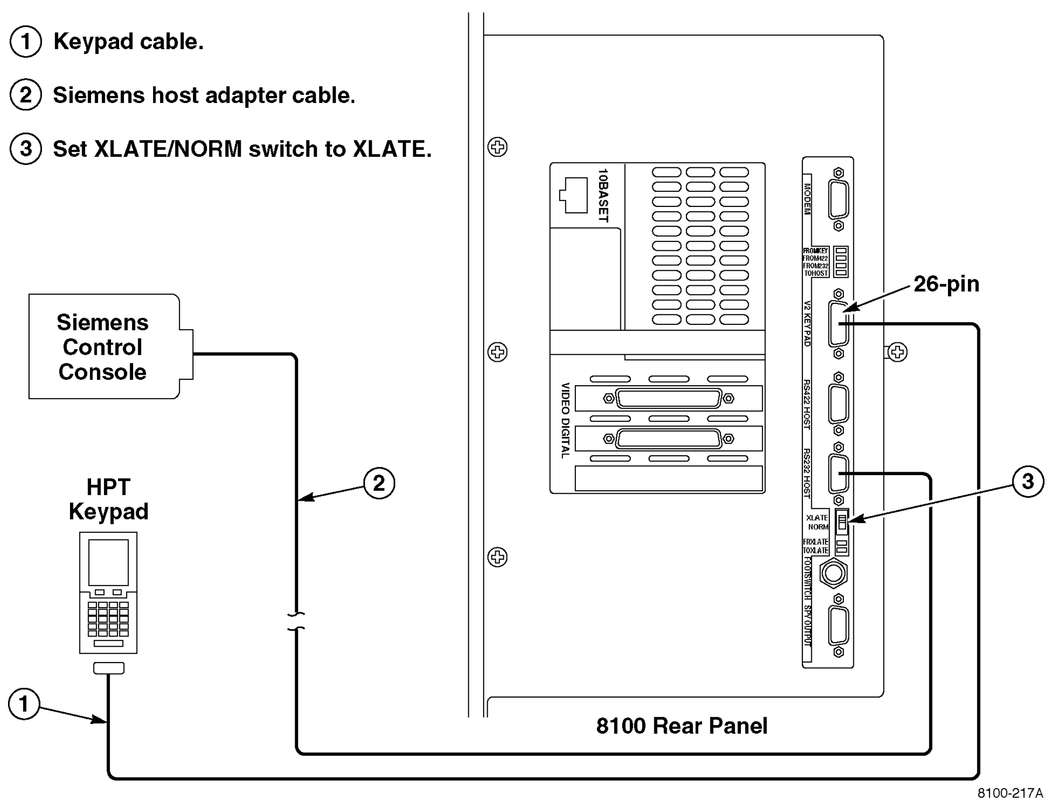


Figure 2-9. Connecting an SHPT Keypad to the DryView 8100 (within 3 Meters)

1. Keypad cable, 26-pin to 26-pin.
2. RS422 cable, 10, 30, or 60 m long.
3. RS232 host cable, 25-pin (m) to 25-pin (m).
4. Host adapter cable (Siemens only).
5. Set XLATE/NORM switch to NORM.
6. Set switches on UKEIB as shown.

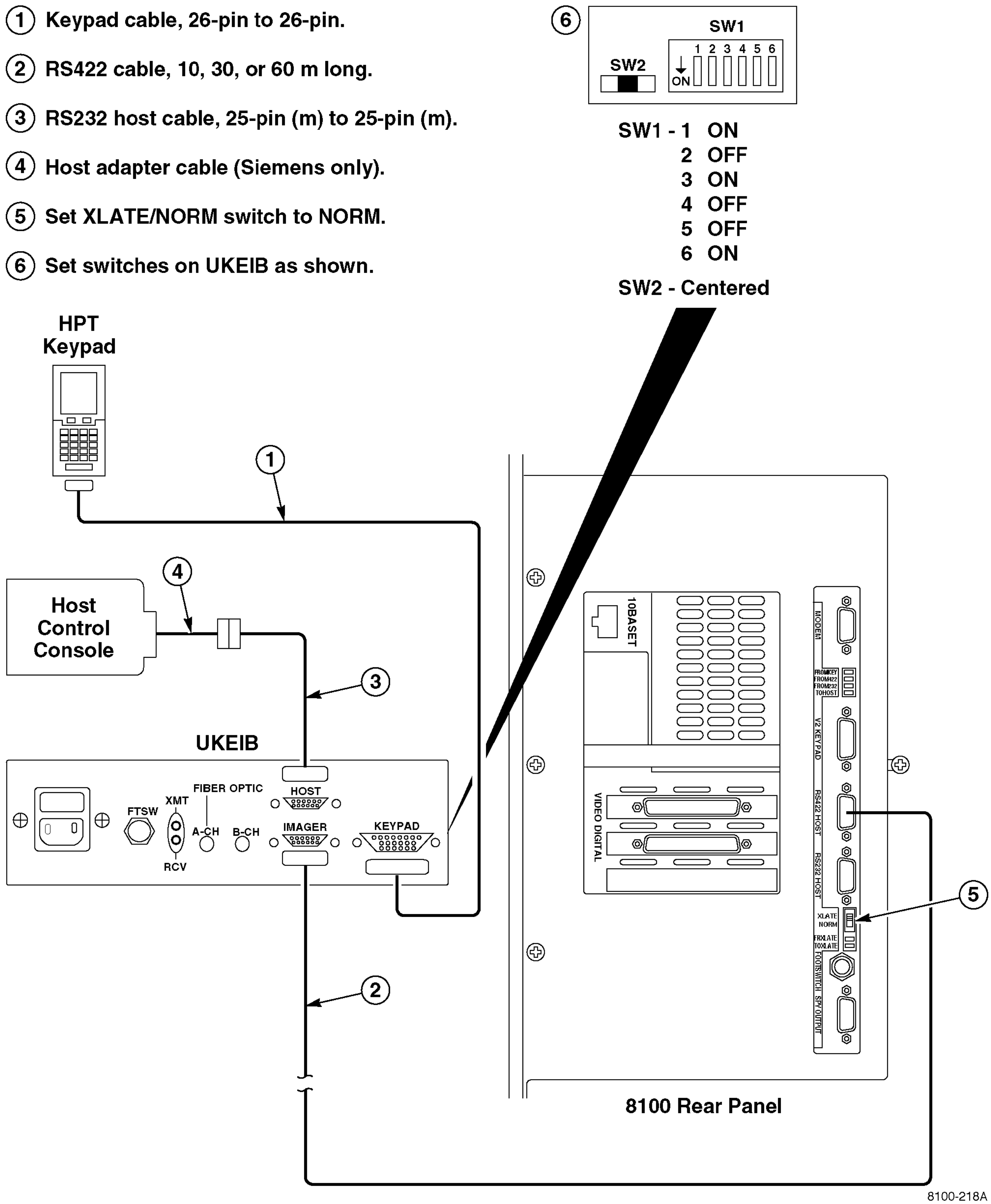


Figure 2-10. Connecting an HPT Keypad to the DryView 8100 (Distance Greater than 3 Meters)

2-4. Setting Jumpers on the Video Board

For video modalities that use a Composite Video Passthrough video source or an external pixel clock, jumper settings on the video board must be changed. Proceed as follows:

1. Make sure power is turned off, and disconnect the power cord.
2. Remove the Image Management System (IMS) from the **DryView** 8100 as described in paragraph 4-14.
3. Refer to Figure 2-11 and reset jumpers as indicated in Table 2-3.
4. Replace the IMS in the **DryView** 8100.

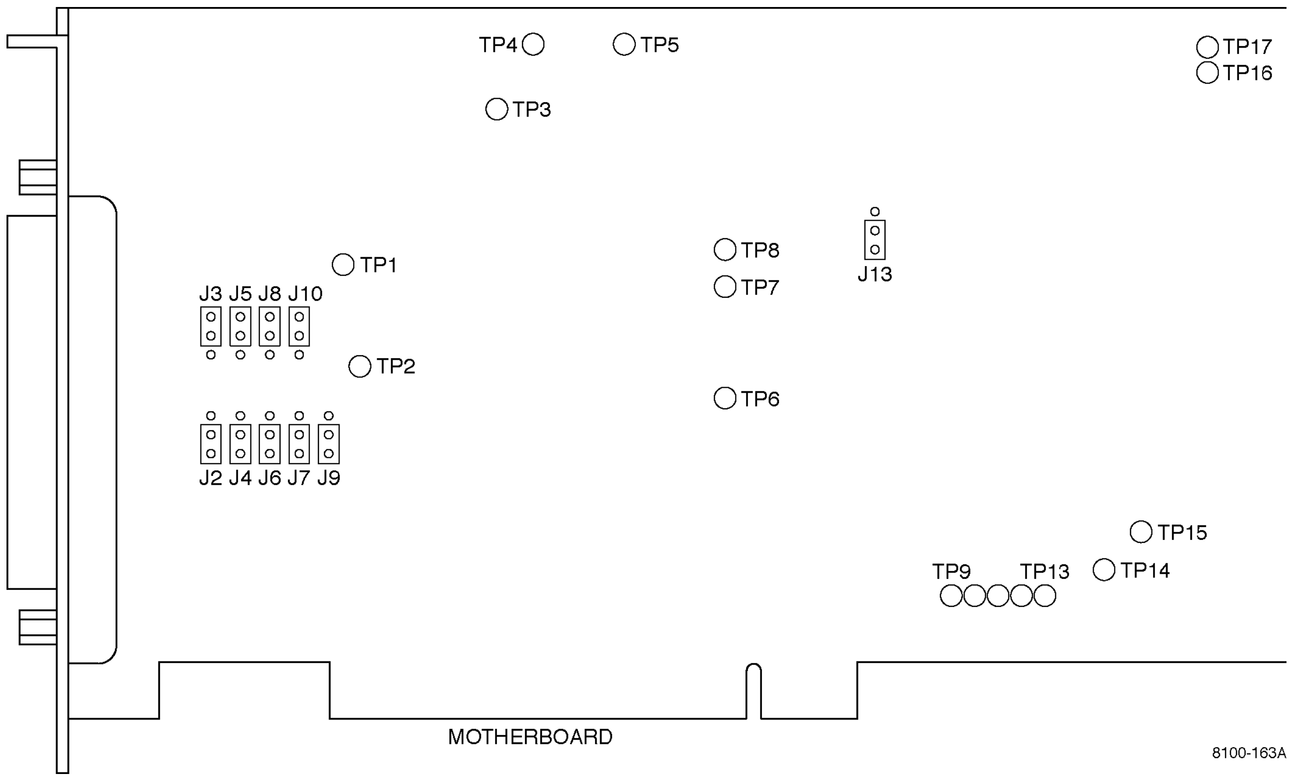


Figure 2-11. Setting Video Board Jumpers

Table 2-3. Setting Jumpers on the Video Board

Function	Jumper	Channel	Jumper Setting: Enable	Jumper Setting: Disable (default)
Passthrough	J6	CT3	1–2	2–3 (TTL Sync)
	J7	CT3	1–2	2–3 (TTL Sync)
	J8	CA3	2–3	1–2 (Terminated)
Pixel Clock	J6	CT3	1–2	2–3 (TTL Sync)
	J7	CT3	2–3	2–3 (TTL Sync)

2-5. Configuring the System

Reconnect the power cord (if disconnected) and apply power to the **DryView** 8100. Then configure the system as described in the following paragraphs.

2-5-1. Connecting the Service PC and Accessing MPC

The service computer can be connected to the **DryView** 8100 in the following ways, as illustrated in Figure 2-12.

- <u>Method 1</u>–The PC and the **DryView** 8100 can be connected through the customer's network, either with or without a hub.
- <u>Method 2</u>–They can be connected via a network hub using standard network cables (RJ-45 connectors) run from the hub to the **DryView** 8100 and to the network card in the PC.
- <u>Method 3</u>–They can be directly connected via a 10BaseT network crossover cable.
- <u>Method 4</u>–They can be directly connected via their serial ports using a standard serial cable (MPC cable).

2-5-1-1. Network Type Connections

The three options for network connection, using 10BaseT cable with RJ-45 connectors, are shown in Figure 2-12.

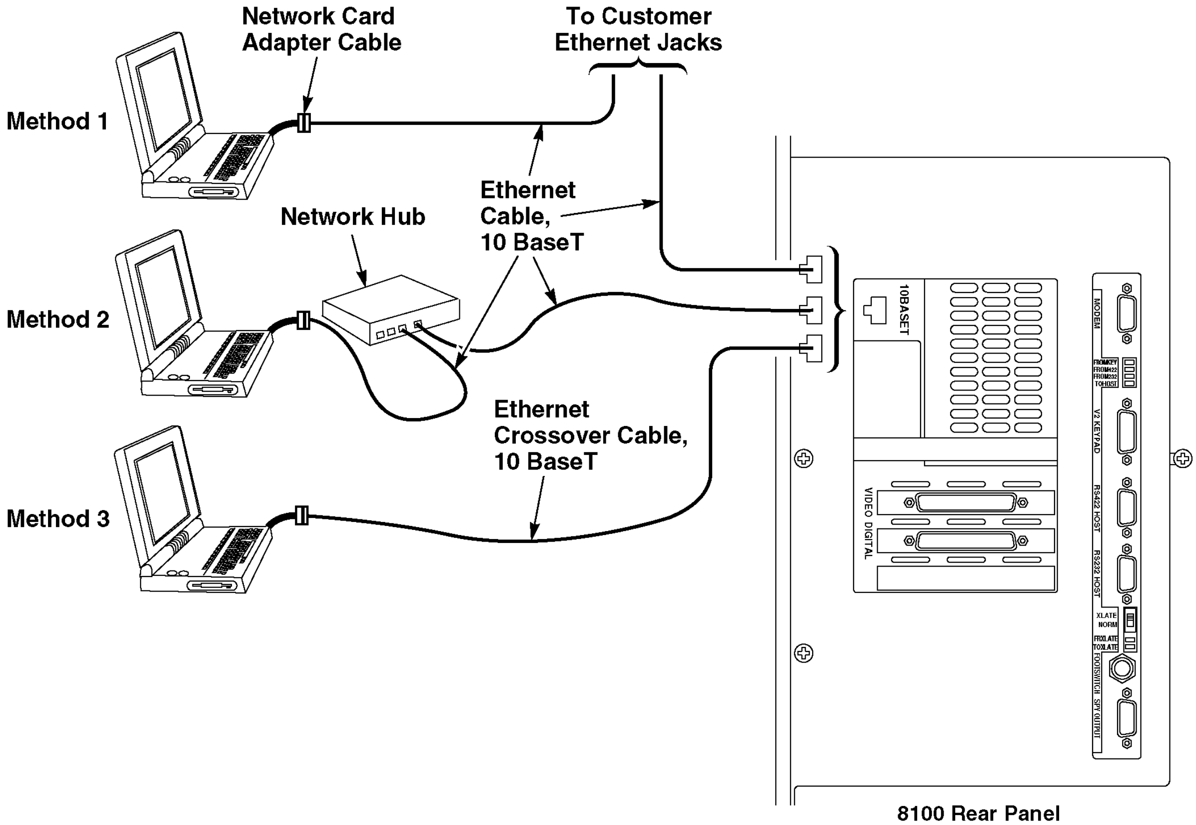
If the **DryView** 8100 is to be on the customer's network:

- Check with the customer's IT Department for an available IP address. You cannot use an IP address that is already in use by another device.)
- Set the IP address of the PC to the same subnet or network address as the IP address of the **DryView** 8100. For example: If the IP address of the **DryView** 8100 is 163.228.48.XXX, the PC must be set at 163.228.48.YYY

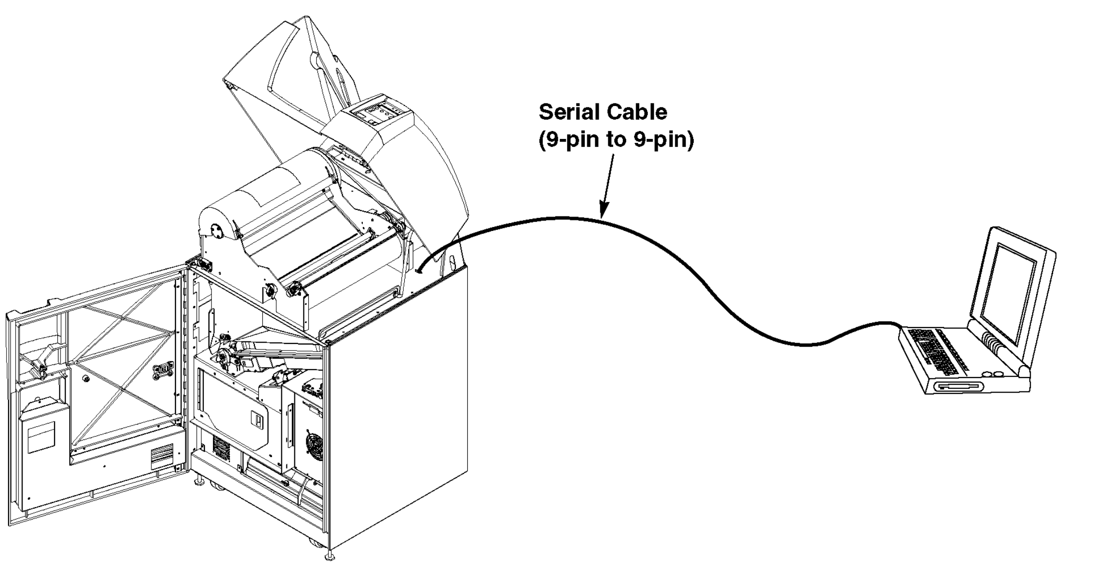
If you are using a network hub:

- Make sure that power is applied to the hub.
- If the **DryView** 8100 is on the customer's network, use the uplink or cascade port on the hub to connect the hub to the network wall jack. This will connect all devices on the hub to the customer's network. (Make sure that the uplink or cascade switch is set correctly, if the hub is so equipped.)

Notes:
1. Computer must have a network card installed.
2. Use the same ac circuit for input power for all components.



Options for Network Connection



Standard Serial Cable Connection

8100-124A

Figure 2-12. Connecting the Service Computer to the DryView 8100

2-5-1-2. Serial Port Connection

The direct serial port connection for use of MPC is shown in Figure 2-12. The following configuration procedures are required before you can use your Service PC to communicate with MPC via the serial port connection:

- You must install a direct connection modem driver in your PC.
- You must configure your PC for using dial-up networking with TCP/IP in Windows 95.

Note

See Section 7, paragraph 7-9-14, for the required procedures.

2-5-1-3. Using the Internet Browser to Access MPC Software

1. Open your web browser by selecting **Internet Explore**r from Windows 95.
2. Make sure the proxy server is disabled, as follows:
   a. Select **View** and then **Internet Options/Connection**.
   b. Uncheck the box labeled **Access the Internet using a proxy server**, and press **Enter**.
3. Access the **DryView** 8100 web page as follows:
   a. If your browser is not running:
      - Click on **Start** and select **Run**.
      - Enter the IP address of the 8100 (do not include leading zeros). Then click **OK**.
   b. If the browser is running: In the address box, enter the IP address of the 8100. Then press **Ente**r.
   c. Create a book mark by selecting **Favorites**, then **Add to Favorites**.
4. Click on **Authorized Field Engineer**, then **Continue**.
5. Enter your Username and Password in the box that appears.
   (You can now select from the MPC main menu.)

2-5-2. Setting System Parameters

Configure the system parameters as follows:

1. From the configuration menu, select **System**.
   The following **System Configuration** screen will display:

Date	1999-xxx-xx
Time	x:xx:xx pm

Acquire Channel	Digital
Maximum Imageable Columns	4361 (Default)
Modem Initialization	AT&F1SO=1&H0&R1&W

2. Click on **Edit System Configuration**.
3. Enter the **Date** and **Time** and make sure the **Acquire Channel** entry matches the modality.
4. Click on **Save Changes**.
5. Click on **Return to Configuration Menu**.

2-5-3. Setting Network (IP) Addresses

Check the IP Address of the laser imager and reset it, if necessary, as described below. If you are connecting into a customer network, you will have to obtain IP Addresses for both the imager and your Service PC and enter them as described below. (If you are not connecting into a customer network, you can operate with the IP Address already set in the imager.)

1. From the MPC main menu, select **Configuration**. From the configuration menu, select **Network**. The following **Network Configuration** screen will display:

8100 TCP/IP Address	163.228.48.82 (for example)
8100 TCP/IP Net Mask	255.255.252.0 (for example)
8100 TCP/IP Gateway	163.228.48.1 (for example)

2. If you need to change IP Addresses, click on **Edit Network Configuration**, enter the new addresses, and save the changes.

Note

DO NOT enter leading zeros in any of the four octets in an IP Address.

3. When you have finished, click on **Return to Configuration Menu**.

2-5-4. Setting Communications Parameters

Set up the parameters for command communication between the host and the imager (either via a keypad or host console) as follows:

1. From the configuration menu, select **Communications**. The following Communications Configuration screen will display:

Parity	Even
Stop Bits	1
Data Bits	8
Baud Rate	1200 baud
EOM	CR
Protocol	831/952

Memory Full Message	BSY
Alarm Mode	Old
Acquire Timeout	25 seconds

P1 (PRI to DCR/PAS)	0 seconds
P2 (DCR to DCR/PAS)	0 seconds
P3 (STP to STC)	0 seconds
P4 (EXP to DCR/EOE)	0 seconds
P5 (EOE to PTC)	0 seconds
P6 (DCR to STC)	0 seconds

2. Click on **Edit Communications Configuration**.
3. Observe the following Caution and Note. Then enter the values required, and click on **Save Changes**.

Caution

Never change Parity, Stop Bits, Data Bits or Baud Rate while the system is actively communicating with a host. This may cause a session or system hangup.

Note

With software release V1.0, the P2 value is used for both P2 and P1. The P3, P4, P5 and P6 values can be changed, but they are not used by the software. The EOM value cannot be changed, It is always CR.

4. Click on **Return to Configuration Menu**.

2-5-5. Setting Digital Parameters

If the system is to receive images from a digital modality:

1. From the Configuration menu, select **Digital Setup**.
The following **Digital Configuration** screen will display:

Pixel Depth	8 bit
Header Mode	Header/Line
Parity	None

2. Click on **Edit Digital Configuration**.
3. Enter the values required, and click on **Save Changes**.
4. Click on **Return to Configuration Menu**.

2-5-6. Setting Video Parameters

If the system is to receive images from an analog modality, set the video parameters as described in Addendum A to this section. (This procedure, since it is fairly lengthy, is set apart in an addendum.) The procedure in Addendum A includes the following steps:

1. Configuring the video hardware
2. Setting up initial video parameters
3. Acquiring a draft image and verifying/adjusting the carrier profile parameters
4. Coarse-tuning the image profile parameters
5. Fine-tuning the image profile parameters

Note

See Addendum B to this section for definitions of “carrier profile” and “image profile” as they apply to classification of the video parameters.

2-5-7. Setting up the Local Panel

Set up the language code (English or Numeric) for the Local Panel, and set starting values for contrast and density in the Local Panel as follows:

1. From the configuration menu, select **Local Panel**.
   The following Local Panel Configuration screen will display:

Language Code	English
Current Contrast	1
Current Density	3.000

2. Click on **Edit Local Panel Configuration**.
3. Enter the values required, and click on **Save Changes**.
4. Click on **Return to Configuration Menu**.

2-5-8. Adjusting Image Quality

Set the basic image quality parameters as follows:

1. From the configuration menu, select **Image Quality**.
   The following Image Quality Configuration screen will display:

User ID	
Modality	

Aspect Ratio	1.00
Match Borders Option	Enabled
Force TFT to Film Dmin	Disabled
Mag Scaling	Disabled
Pixel Correct	Off

831 Cmd Set Beta Table – Sharp	3
831 Cmd Set Beta Table – Smooth	15
952 Beta Override	Off

Prints until PM	9965

2. Click on **Edit Image Quality Configuration**.
3. For the **User ID** entry, enter the ID information that the user wishes to appear on each sheet of film. This will ordinarily include user name, date, and job data. You can use the following codes to abbreviate your entry:

Code	**Indicates**
%C	Enter a timestamp in the following format: DOW (day of week) MMM DD HH:MM:SS YYYY
%J	Enter job information in the following format: #J N:M (where J = system job number, N = current copy, and M = total copies

%% Enter a % character

Examples of **User ID** entries:

If you enter **University Hospital: %C %J**, the following will print:
University Hospital: Mon Jun 14 11:01:14 1999 #35 8:50

If you enter **%C %J ––– University Hospital**, the following will print:
Mon Jun 14 11:01:14 1999 #35 8:50 ––– University Hospital

If you enter **University Hospital Radiology at 90%% Capacity**, the following will print:
University Hospital Radiology at 90% capacity

Note

Unrecognized codes will print out as is. For example, if you enter %D, the characters %D will be printed in the user ID.

4. For the **Pixel Correct** entry, be aware that the value must be **OFF**, if a 9410 is to connect to the 8100. (If the value is **ON**, the 8100 will fail DZO.)
5. After entering all required values, click on **Save Changes**.
6. If you wish to reset **Prints until PM** to 10,000, click on **Reset Prints until PM** on the Image Quality Configuration screen.
7. To acquire a list of available Transfer Function Tables, click on **TFT Files**. A screen listing the TFT files available on this 8100 will display.
8. Select the desired TFT file by placing a check mark in the appropriate box.
9. Click on **Return to Configuration Menu**.

2-5-9. Validating Digital or Video Setup with the Customer

1. Ask the customer to select a typical image that contains the desired range of contrasts.
2. Acquire the image using the keypad or host control. Then print a contrast test. This will print the film using the default interpolation value (smooth to sharp) to process the image.

Note

Do not use the MPC Print function, because this will print in replicate mode, which is not appropriate here.

3. If everything on the image is too light or too dark, adjust the density setting until it is acceptable.
4. After the density setting is acceptable, have the customer select an optimal contrast setting by printing test films at different contrast settings.

Note

For video setup: If the customer finds the image unacceptable at any combination of density and contrast levels, it is possible that Gain and Black Level fine tuning needs to be redone using a different image (see Addendum A). It is also possible that the OEM monitor is not adjusted properly.

5. Have the customer select smooth or sharp image processing. If neither smooth nor sharp is acceptable to the customer, the interpolation settings may need to be changed (see paragraph 3-7 in Adjustments).

2-6. Entering Site Information

Enter general descriptive information about the customer site into the system as follows:

1. From the main menu, select **Site Info**.
   The following Site Information screen will display:

Site	
Address	
Contact	
Phone	
Fax	
Modem Number	
Alternate Contact	
Location	
Notes	

2. Click on **Edit Site Information**.
3. Enter the values requested, and click on **Save Changes**.
4. Return to the main menu.

2-7. Installing the Quick Reference Guide Holder

1. Temporarily position the holder against the back of the upper hood in the position shown in Figure 2-13, to establish the correct location for it.

Note

After installation, the top of the holder (including the bent flange) should extend about 1/2 inch above the hood, as shown in the front view in Figure 2-13.

2. Peel off the adhesive protection and firmly press the holder flanges against the back of the hood in the established position.
3. Place the Quick Reference Guide in the holder.

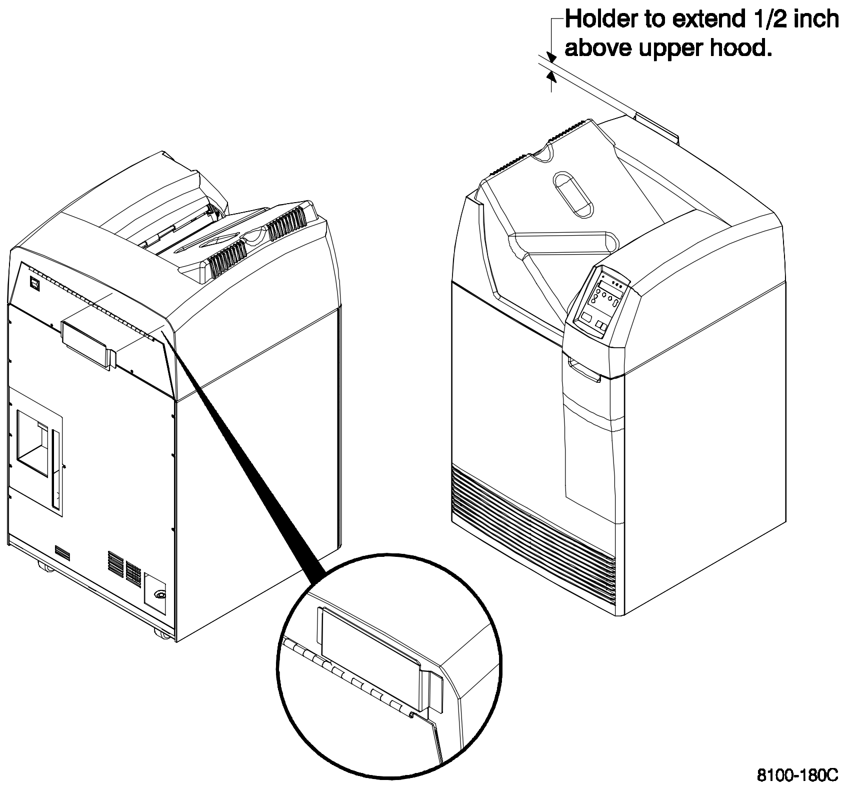


Figure 2-13. Installing the Quick Reference Guide Holder

2-8. Editing the Service History Log

After completing the installation, enter the appropriate data in the Service History Log as follows:

1. From the main menu, click on **Service History**.
   The Service History Log will display. (The log will of course be empty at installation.)
2. Select **Add New Log Entry**.
   The following Service Log Entry form will display:

Date	(Year-Mon-Day)
Time	(x:xx pm)
Name	(Enter your name.)
Summary	(Summarize the call in one line.)
Details	(Add key details.)

3. Fill in the entry form and click on **Save Changes**.

2-9. Backing up the Configuration Settings

Use the MPC backup function to back up the configuration files and copy the files onto a floppy diskette. See the procedure for backup in paragraph 7-9-10. (You can store the diskette in the IMS floppy drive.)

Addendum A. Setting Video Parameters

If the system is to receive images from an analog modality, set the video parameters as described in the following paragraphs. Video setup involves five basic steps:

1. Configuring the video hardware—This is done for the most part in hardware setup in the preceding paragraphs of the Installation section. See also paragraph A below.
2. Setting up initial video parameters—There are three methods for doing this (see paragraph B):
   - Importing a qualified CHP file.
   - Using AutoSync to automatically calculate a video parameter set.
   - Manually entering a video parameter set.
3. Acquiring a draft image—Acquiring a usable image and adjusting/verifying that the “carrier profile” parameters are set correctly. These include Frame Period, Interlaced Mode, Pass Mode, TTL Pixel Clock, and Vertical Sync Type. See paragraph C.

Note

See Addendum B following for definitions of “carrier profile” and “image profile” as they apply to classification of the video parameters. Also, detailed descriptions of all the video parameters as well as most of the video setup functions are provided in MPC Help.

4. Coarse tuning the video parameters—Rough tuning the following “image profile” parameters: Pixel Delay 2, Pixel Delay, Black Level, Gain, Horizontal Total, and Vertical Total. See paragraph D.
5. Fine tuning the video parameters—Fine tuning the image framing parameters (Horizontal Delay, Vertical Back Porch, Horizontal Active, Vertical Active) and Pixel Delay, Pixel Delay 2, Black Level, and Gain. See paragraph E.

A. Configuring the Video Hardware

For video modalities, a Type C Video Board must be installed in PCI Slot 1 (J3) of the IMS motherboard., and cables must be connected as shown in Figure 2-5 in Installation. Also the Video Board jumpers must be set correctly. Normally the jumpers will have to be reset at installation only if the video source is composite video passthrough or has an external pixel clock (see Tables 2-1 and 2-2). At this point in installation these matters should already be taken care of. However, be aware of two potential problems in cabling:

1. Double termination of the video signal—If the host monitor image suddenly goes bad when the video cable is connected to the 8100, the video signal may already be terminated once, and connecting to the 8100 results in double termination. If this occurs, resolve the problem with the customer. Check for the problem by observing the host monitor while connecting the video cable to a powered up 8100.
2. Ground loops—These can cause noise that will affect fine tuning of the video parameters. Ground loops can be avoided by connecting the 8100 to the same power source as the customer modality. If noise becomes a problem during parameter fine tuning, check for a ground loop as follows:
   a. Temporarily disconnect the power cable ground wire from the 8100 by using a 2–prong adapter on the power cord.
   b. Run a ground wire from the 8100 to OEM ground. (There is a convenient ground connection on the power supply at the back of the 8100.) If the noise goes away, there is a ground loop problem that must be resolved with the customer.
   c. Make sure the normal power (3-prong) ground connection is restored.

Note

Avoid using passive filters or hum eliminators in line with the video source. These can degrade the quality of the video signal.

B. Setting Initial Video Parameters

The video parameters can be set to initial values by three different methods:

1. By uploading a CHP file. This is the best and quickest method. It correctly sets all carrier profile parameters. However you will have to check and "tune" the image profile parameters.
2. By using AutoSync. This is the preferred method if you do not have access to an appropriate CHP file, but can access a suitable video image. The software examines the incoming video and sets the appropriate parameter values into registers on the video board. However, after AutoSync is completed, you will have to tune all video parameters, including the carrier profile parameters.
3. By entering the parameters manually.

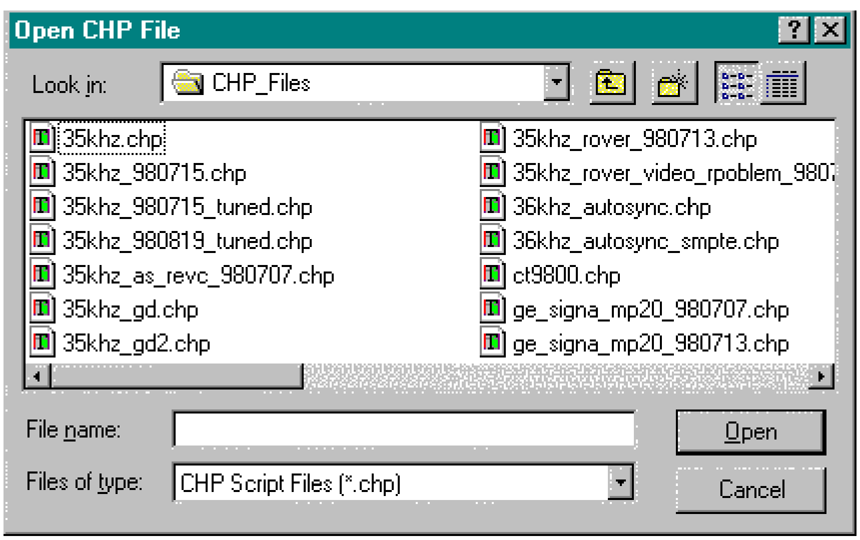
Method 1. Uploading a CHP File to Set the Video Parameters

1. Launch the Video Setup application (available on CD-ROM).
2. Enter the **Imager Address**, your **User Name**, and **Password**. Then click on **Login**.

Note

For descriptions of the modes and operations of the Video Setup screen and tool bar, see Addendum B at the end of this section.

3. On the **Video Setup** Tool Bar, click on the Open CHP File button. The **Open CHP File** window will display:



4. Select the desired CHP file and click on the **Open** button. The CHP file will be read and the video parameter values will be set into the imager. All carrier profile parameters will be set correctly.

Method 2. Using AutoSync to Set the Video Parameters

Be aware that Autosync does not work for all video formats, and if it does, it does not provide a final tuned set of video parameters.

Selecting a Usable Image for AutoSync

Resolve patterns with 1 on, 1 off in both directions are excellent test images to use with Autosync. Vertical grill patterns with 1 on, 1 off are also very good. SMPTE patterns often work, as well, but are not the best choice.

If you do not have a suitable test image, you can use a clinical image if it has the characteristics listed below. If it does not have these characteristics, the video parameters generated by AutoSync may be incorrect, and captured image quality will be inferior.

1. The image should remain stable during the entire AutoSync operation. If it does not, results are unpredictable.
2. At least 1% of the image must be the brightest white. (If not, AutoSync will underestimate brightest white, and images will be too bright, with too much contrast.
3. At least 1% of the image must be darkest black. (If not, AutoSync will overestimate darkest black, and have too much contrast.)
4. Light (50% gray or whiter) portions of the image must touch all four sides of the image. Medium to bright pixels at the edges are best. (If the image does not have these characteristics, AutoSync may fail to recognize image boundaries, and images may be clipped – or there may be no image capture at all.)
5. Wide solid black bars (3% gray or blacker) stretching across the entire image should be avoided. (The bars may be interpreted as composite sync information, and the image may be scrambled.)
6. Include as many edges (text, fine stripes, or checkered patterns) as possible.
7. Test images (especially those with a resolve pattern), or images with lots of text are good.

Note

If AutoSync does not work, try annotating the image with a lot of text, if possible. The goal is to have at least one significant pixel transition somewhere in every pixel column. Characters with slanted edges, such as A, O, Q, S, and X are best. Characters with straight edges, such as E, F, H, I, L and T are not as useful.

Setting the Parameters

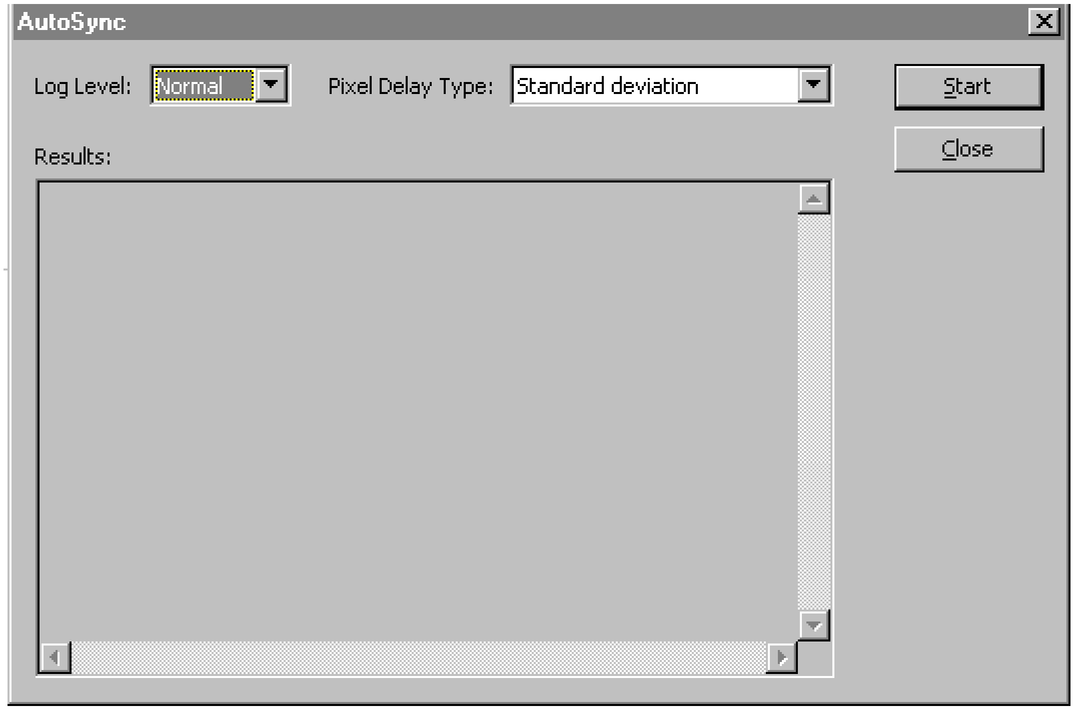
1. Launch the Video Setup application (available on CD-ROM).
2. Enter the **Imager Address**, your **User Name**, and **Password**. Then click on **Login**.

Note

For descriptions of the modes and operations of the Video Setup screen and tool bar, see Addendum B.

3. Connect the signal source that you will use for video setup to the 8100.

4. On the **Video Setup** Tool Bar, click on the AutoSync button. The **AutoSync** dialog box will display.



5. Use the dropdown **Log Level** box to select the level of the descriptive detail to display in the **Results** window. The log levels include four categories: None (no information), Terse, Normal, and Verbose.
6. In the **Pixel Delay Type** box, select **Standard deviation**. (This, the only selection that is currently implemented, defines the method that AutoSync will use to determine the Pixel Delay value.)
7. Click on **Start**. The AutoSync process will begin. (The process usually completes in less than a minute, but can take much longer, depending on the image, the video format, and the options selected. If AutoSync is successful, an image capture is executed and the image displays in the Video Setup window. The **Results** window also displays a log of descriptive data.)

Method 3. Setting the Video Parameters Manually

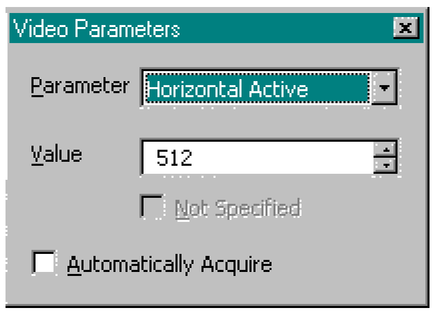
If you do not have a CHP file, and AutoSync does not work, you will have to load each video parameter manually as described below. You can obtain parameter information from a script file or an OEM specification sheet, if these are available. The video parameters must be set closely enough so you will be able to acquire a video image. After an image is acquired (paragraph C), you will have to tune all parameters, both carrier profile and image profile (paragraphs D and E).

1. Launch the Video Setup application (available on CD-ROM).
2. Enter the **Imager Address**, your **User Name**, and **Password**. Then click on **Login**.

Note

For descriptions of the modes and operations of the Video Setup screen and tool bar, see Addendum B at the end of this section.

3. On the **Video Setup** Tool Bar, click on the Edit Video Parameters button. The **Video Parameters** window will display:



4. Use the dropdown **Parameter** box to select each parameter in turn. The parameter names are ordered by expected frequency of use, not alphabetically. (The last three parameters in the list, Board Type, Pixel Clock Frequency, and Pixel Time, are not editable, and are included for information only.)

Note

The **Value** box will show the new value as you edit the parameters. If **Not Specified** is checked, the **Value** box is dimmed and not editable. This means that the system will choose an appropriate value automatically rather than use a value that you select.

5. After you enter a new parameter value, press **Enter** to post the change.

C. Acquiring a Draft Image

After you have set the video parameters initially by one of the three methods described in the previous paragraph, you must do the following to acquire a draft image that can be “tuned”:

- Acquire a “first” image to complete video setup. (If you used AutoSync successfully in the previous setup step, you have already acquired this image.)
- Verify and adjust the carrier profile parameters to successfully acquire a “draft” image. (If you imported a qualified CHP file in the previous setup step, the carrier profile parameters are already set, and verification/adjustment is not required.)

Acquiring a “First Image”

1. On the **Video Setup** screen, set **Bit Depth Mode** at **8 bit**. (This will provide much faster image transfer time than 10 bit.)
2. Connect the signal source that you will use for video setup to the 8100.
3. On the **Video Setup** Tool Bar, click on the **Acquire** button. The test pattern (or other video signal) should display on the **Video Setup** screen.

Note

If image acquisition failed, the initial video parameter set is not close enough to the correct values. You will have to reset the parameters using a different method or use the **Video Parameters** window to edit the current values.

Verifying/Adjusting the Carrier Profile Parameters

1. On the **Video Setup** Tool Bar, click on the **Edit Video Parameters** button.
2. In the **Video Parameters** window, use the dropdown **Parameter** box to select the following carrier profile parameters and verify/adjust the values as necessary. (If you check the **Automatically Acquire** box, an image acquire will occur after every value change.)

Parameter	Value
Video Source	Refer to Table 2-1 or 2-2 for types.
Horizontal Frequency	Range 5.000 to 105.000 for separate TTL sync or 12.000 to 105.000 for composite video.
Pass Mode	Usually not specified
Interlaced Mode	OFF = non-interlaced, ON = interlaced (standard polarity), ODD = Interlaced (reversed polarity).
TTL Pixel Clock	NONE, CT3, –CT3 (Inverted). Refer to Tables 2-1 and 2-2.
Horizontal Sync Width	Not Specified
Vertical Sync Type	NORMAL, BLOCK, or STRAY
Frame Period	Usually not specified
Dual Pass Delay	Not Specified
Board Type	Type C (not editable)

D. Coarse-Tuning the Image Profile Parameters

This procedure assumes that the carrier profile parameters are set correctly. Coarse tuning verifies that the values for the following five image profile parameters are reasonably close to correct: Pixel Delay 2, Pixel Delay, Black Level, Gain, Horizontal Total, and Vertical Total. Adjustment is required only if a value is grossly incorrect. In many cases, this procedure will require no adjustment, and can be completed quickly. If a qualified CHP file was used to set the parameters initially, for example, chances are good that no coarse adjustments will be necessary. If AutoSync was used, most of the parameters should be set fairly well, but Horizontal Total should definitely be verified.

1. On the **Video Setup** screen, make sure that **Bit Depth Mode** is set at **8 bit**. (This will provide much faster image transfer time than 10 bit.)
2. Use the **Video Parameters** window to verify/adjust image profile parameters in the following order:

Parameter	Value
Pixel Delay 2	Not Specified
Pixel Delay	Adjust to remove obvious ghosting from the image.
Black Level	Adjust so the minimum pixel value in the entire image is near 0 (lower limit). For 8-bit mode, values of 15 or less are OK.
Gain	Adjust so the maximum pixel value in the entire image is near the upper limit. For 8-bit mode, 240 or more is acceptable.
Horizontal Total	Set to remove vertical aliasing stripes from the image. (Ghosting on both the leading and trailing edges of regions on the image is a symptom of incorrect Horizontal Total.)
Vertical Total	Either set to its known value or Not Specified.

3. If you need to adjust a parameter value, use the dropdown **Value** box to enter the new value:
   a. Check the **Automatically Acquire** box.
   b. Use Up Arrow or Down Arrow to enter small changes. (The changes will post automatically.)
   c. Enter larger changes via the keyboard. Then press **Enter** to post the change.

E. Fine-Tuning the Image Profile Parameters

This procedure assumes that coarse tuning of the image profile parameters has been completed and that the carrier profile parameters were set correctly in paragraph C. This procedure tunes the image framing parameters, Horizontal Delay, Vertical Back Porch, Horizontal Active, and Vertical Active. It also fine tunes the following parameters that were just coarse tuned: Pixel Delay, Pixel Delay 2, Black Level, and Gain.

1. On the **Video Setup** screen, make sure that **Bit Depth Mode** is set at **8 bit**.
2. Use the **Video Parameters** window to fine-tune the image framing parameters in the following order:

Note

Framing adjustments are required if image data sampling does not correctly start and stop on the actual boundaries of the image. This shows up in the image display either as extra lines of blanking data (usually shown as black) at the edge of the image, or portions of the image clipped and not visible. It is easier to see rows and columns for framing if you zoom the image to 400% or higher.

Parameter	Value
Horizontal Delay	Decreasing moves entire image to the right. Increasing moves it to the left.
Vertical Back Porch	Decreasing moves entire image down. Increasing moves it up.
Horizontal Active	Decreasing removes columns from right side of image. Increasing add columns.
Vertical Active	Decreasing removes rows from bottom of image. Increasing adds rows.

3. On the **Video Setup** screen, set **Bit Depth Mode** at **10 bit**.
4. Use the **Video Parameters** window to fine-tune the following image profile parameters in order:

Parameter	Value
Pixel Delay	Adjust to eliminate ghosting by visual inspection or via the Consistency Check function (see Step 6 below).
Pixel Delay 2	Not specified usually. If desired, adjust to further minimize ghosting in images acquired using dual pass mode.
Black Level	Adjust so the minimum pixel value in the entire image is either 1 or 2 (see step 7 below).
Gain	Adjust so the maximum pixel value in the entire image is either 1021 or 1022 (see step 7 below).

5. To adjust a parameter value, use the dropdown **Value** box to enter the new value as follows:
   a. Check the **Automatically Acquire** box.
   b. Use Up Arrow or Down Arrow to enter small changes. (The changes will post automatically.)
   c. Enter larger changes via the keyboard. Then press **Enter** to post the change.
6. To aid in fine-adjusting Pixel Delay, refer to the Consistency Check in Addendum B.

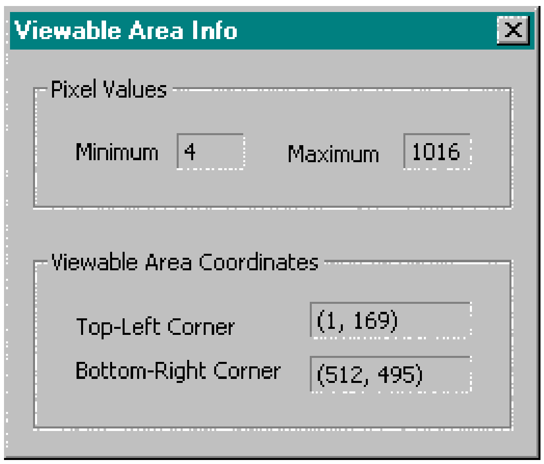
7. To fine-adjust Gain and Black Level, use the following guidelines:

   a. Select areas on the image that show the blackest black and the whitest white. Then use the zoom function to enlarge these areas.

Note

When you zoom, make sure you keep your selected black and white areas in the viewable area, and that there are no edge transition lines (blanking pulses) in the area.

   b. Click on the Viewable Area Info button on the Tool Bar to display the following window. (At this point both this window and the **Video Parameters** window should be on the **Video Setup** screen.)



   c. Use the **Video Parameters** window to change parameter values, as necessary, while observing the Viewable Area information.

Note

An optional mode of displaying pixel values is to use Info Mode (selectable from the tool bar) and position the cursor over the black and white image areas to display the pixel value.

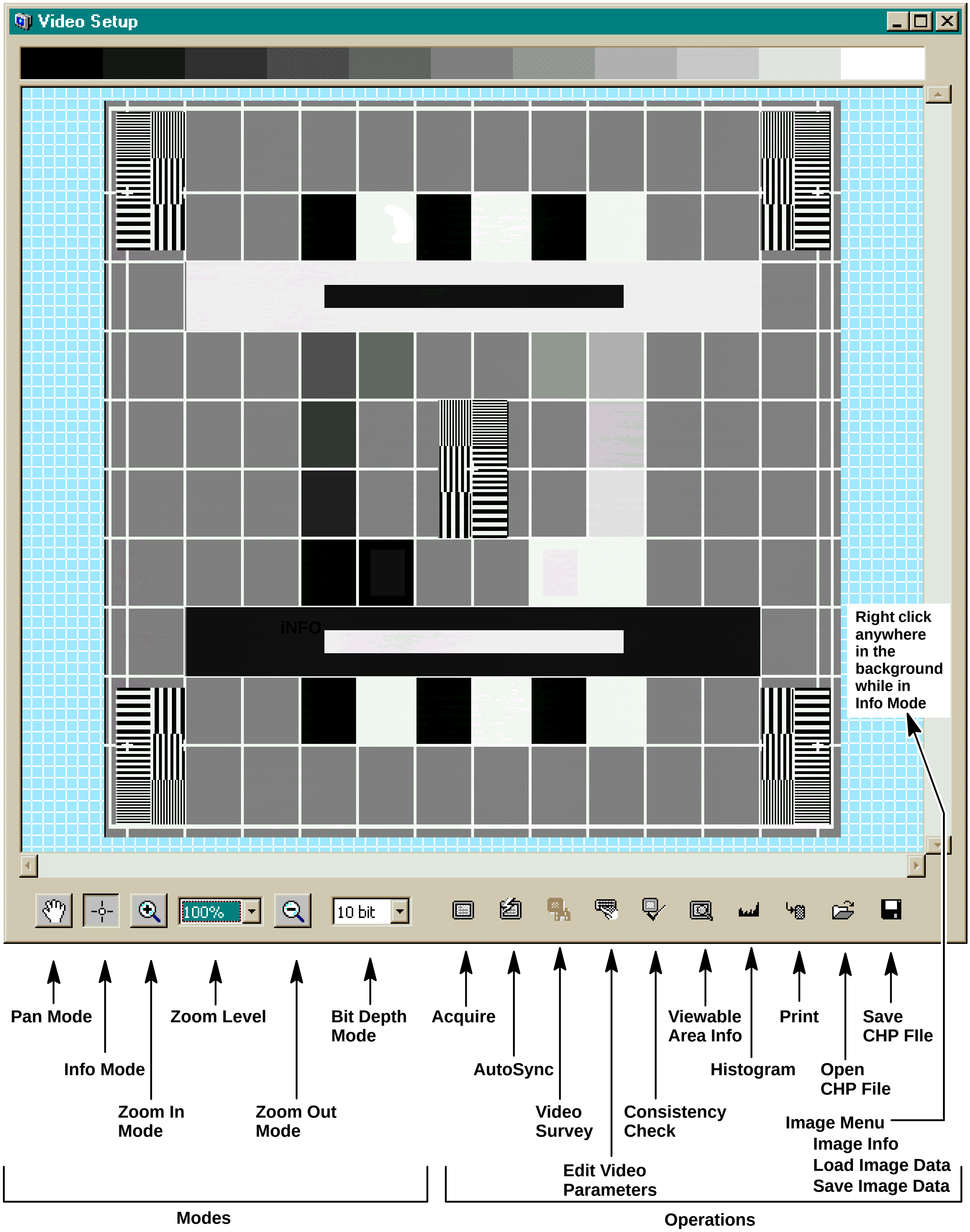
8. After final Gain has been set, verify that the Black Level minimum pixel value setting is still either 1 or 2. If not, reset Black Level and Gain.
9. Acquire a final image and print it to film using the MPC Print facility. (Do NOT print an image using the keypad or host control.) The print will be a 1-up image in replicate mode, which reproduces the image exactly without any smoothing. Any blurring or ghosting will be evident, and not disguised by processing of the image.
10. Inspect the print to confirm optimal image quality.
11. Use the Save CHP File function to store the set of video parameters in MPC.

Note

After completing video setup, return to paragraph 2-5-7 (and following) in Installation to complete the system installation and to validate video setup.

Addendum B: Video Setup Functions

Video Setup Screen



Video Setup Tool Bar Functions

Mode Control	Function
Pan Mode	Provides the ability to drag the image with the mouse.
Info Mode	This is the master mode. It allows use of the mouse to display pixel code values at any location on the image.
Zoom In Mode Zoom Level Zoom Out Mode	Allows zooming in or out and setting the zoom level from 25% to 1600%. **Note**: A zoom selection of less than 100% will corrupt the image. (This is a Windows problem, not an image problem.)
Bit Depth	Drop box allows selection of either 8-bit or 10-bit.

Operation Control	Function
Acquire	Grabs and displays a video image using the current video parameter set and pixel bit depth. If grab fails, an error message displays.
AutoSync	Analyzes the video signal to automatically identify an appropriate set of video parameter values. If AutoSync succeeds, updates the video parameters to the calculated values, automatically grabs the image and displays its. If AutoSync fails, an error message is displayed.
Video Survey	Not implemented.
Edit Video Parameters	Displays a window for a particular video parameter and shows the current parameter value. The window allows you to edit the parameter value and press **Enter** to save it. If **Automatically Acquire** is checked, a new image is grabbed after every change.
Consistency Check	Displays a window that compares individual pixels across multiple grabs of the same image. (Pixel code variation is a useful metric, used to fine tune Pixel Delay and Horizontal Total.)
Viewable Area Info	Displays a window that shows minimum and maximum pixel code values for the displayed portion of the image. Used to exclude parts of image undesirable for fine tuning. (Useful for fine tuning Gain and Black Level.)
Histogram	Displays a window that graphs the distribution of pixel code values in the image. X axis is pixel code value. Y axis is pixel count.
Print	Prints the currently displayed mage on film, 1-up, using replicate.
Open CHP File	Displays an “open file” dialog box which allows you to import a set of video parameters into the IMS from a CHP file.
Save CHP File	Displays a “save file” dialog box which allows you to export the current set of video parameters to a CHP file.
Image Menu: Image Info Load Image Data Save Image Data	Access the Image Menu by right-clicking anywhere in the window background while in Info Mode. Displays image information for the entire image, regardless of what portion of the image is displayed. Reads and displays raw video image data from a specified image file stored in MPC. (Standard Windows open file dialog box. Default filter is *.raw, *.pic) Writes a file to MPC (as opposed to the IMS) containing the raw video data for the current image. (Standard Windows save file dialog box. Default filter is *.raw)

Video Parameter Basics

For convenience of reference, the video parameters are divided into two subsets: carrier profile parameters and image profile parameters, as shown below:

Carrier Profile	**Image Profile**
Board Type	Black Level
Dual Pass Delay	Gain
Frame Period	Horizontal Active
Horizontal Frequency	Horizontal Delay
Horizontal Sync Width	Horizontal Total
Interlaced Mode	Pixel Delay
Pass Mode	Pixel Delay 2
TTL Pixel Clock	Vertical Active
Vertical Sync Type	Vertical Back Porch
Video Source	Vertical Total

Note

Two parameters, Pixel Time and Pixel Clock Frequency, are not part of either profile set. They are calculated using Horizontal Frequency and Horizontal Total and are displayed on the Video Setup screen only for user convenience. They are not used to describe the video signal to the video acquisition system.

A distinction is made between the two subsets of parameters for purposes of video setup. At the end of the Acquire Draft Image step during video setup, all carrier profile parameters should be set correctly, but the image profile parameters may or may not be set correctly. The remainder of setup consists of coarse and fine tuning the image profile parameters.

- Carrier profile parameters describe the video signal itself as opposed to the image content carried on the video signal. These parameters remain constant from one imager to another for the same modality. Therefore if a correct CHP file is imported to set the video parameters, the carrier profile parameters should not have to be tuned.
- Image profile parameters describe the image content. These parameters may vary slightly from one imager to another for the same modality. Therefore, even if a correct CHP file is imported to set the parameters, the image profile parameters may still require fine tuning.

Video Parameter Descriptions

Refer to Help in MPC for detailed descriptions of the video parameters.

Video Param. (MPC)	Description	CHP Equivalent	Tips for Setting
Horizontal Active	Number of active horizontal pixels in the scan line.	Image Width	
Horizontal Total	Total width of scan line, including active video plus horizontal front porch, back porch and sync.	Horizontal Total	
Horizontal Delay	Portion of video signal from start of horizontal sync pulse to start of active video.	Horizontal Back Porch and Horizontal Back Sync	
Vertical Back Porch	The portion of the video signal from the trailing edge of vertical sync to the start of active video.	Vertical Back Porch	
Vertical Active	Number of active vertical scan lines in the image.	Image Height	
Vertical Total	Total number of scan lines in one video frame.	Vertical Total	
Gain	Video input signal gain. Corresponds to voltage difference between white and black.	Gain	Use Viewable Area Info window to fine tune.
Black Level	Voltage corresponding to the minimum level of picture information (i.e., black) in the video signal.	Black Level	Use Viewable Area Info window to fine tune.
Pixel Delay	Specifies the phase of the sampling clock, which is a delay relative to horizontal sync.	Phase Delay	Use Consistency Check.
Video Source	The type of video signal input to the 8100.		
Horizontal Frequency	The number of scan lines transmitted per second in the video signal.	Horizontal Frequency	
Pass Mode	Specifies order in which pixel data (even and odd pixels) will be captured.	Pass Mode	
Interlaced Mode	Specifies whether video is interlaced, and if so, the order of the odd and even fields.	Interlace	
TTL Pixel Clock	Specifies whether or not an external pixel clock is supplied, and whether it is inverted.	TTL Pixel Clock	
Horizontal Sync Width	Width of the horizontal sync portion of the video signal.	Horizontal Sync Width	
Vertical Sync Type	Specifies the type of sync info available during the vertical sync and vertical front porch periods.	Vertical Sync Type	

Video Param. (MPC)	Description	CHP Equivalent	Tips for Setting
Frame Period	The time it takes to transmit a single frame of video signal, rounded up to the next whole number.	Frame Period	
Pixel Delay 2	Pixel delay for the second pass of dual pass grab. (Not normally used.)	Phase Delay 2	
Dual Pass Delay	Specifies whether an entire frame is skipped between the even and odd passes in a dual pass grab.	Dual Pass Delay	
Board Type	Only a Type C Video Board can be used currently.		
Pixel Clock Frequency	The number of pixels transmitted per second.		This parameter is not directly editable.
Pixel Time	The width, in time, of a single image pixel.		This parameter is not directly editable.

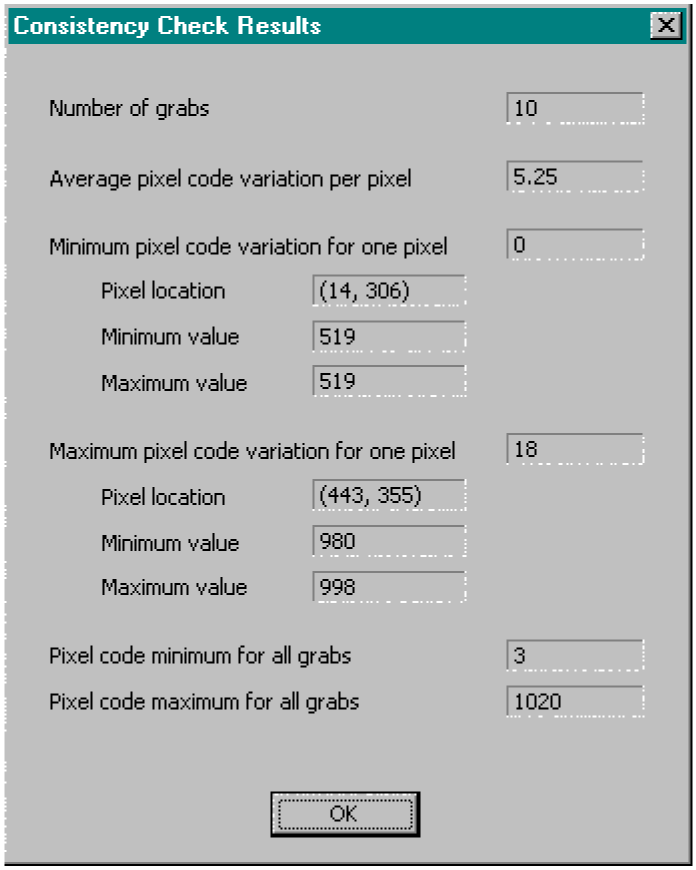
Running a Consistency Check

The video consistency check consists of multiple captures of the same image using the current video parameter set and pixel bit depth. The minimum and maximum code values for each pixel in the image are tracked across all captures. After the captures are completed, statistics are calculated on the resulting pixel code variations. Useful metrics include the average pixel code variation per pixel and the maximum pixel code variation for the worst case pixel. The latter can be used to fine tune Pixel Delay and verify the Horizontal Total setting.

The theory behind pixel delay is simple. If pixel delay is set precisely, pixel sampling occurs on the flat portion of the pixel waveform, between the leading edge and the trailing edge, and after the signal has settled. Sampled values here will be consistent from one sample to the next. If pixel delay is set incorrectly, sampling occurs on the leading or trailing edge of the pixel waveform where the slope is large. Sampled values here will tend to vary significantly because of the slope of the signal.

To run a consistency check:

1. Acquire an image.
2. Click on the Consistency Check button on the Video Setup Toolbar. The image will be captured several times in succession and the results will be displayed in the **Consistency Check Results** window:



Display functions are described as follows:

Display Item	Definition
Number of grabs	The number of image captures for the consistency check.
Average pixel code variation per pixel	The average difference between the minimum and maximum pixel code values for all pixels in the image over all captures.
Minimum pixel code variation for one pixel	Details for the one pixel in the image with the smallest variation over all captures. The minimum variation is shown, with pixel location and actual minimum and maximum values. Location 1,1 is the upper left corner of the image. There may be many pixels with the same minimum variation. The one shown is the first one encountered.
Maximum pixel code variation for one pixel	Details for the one pixel in the image with the largest variation over all captures. The maximum variation is shown, with pixel location and actual minimum and maximum values. Location 1,1 is the upper left corner of the image. There may be many pixels with the same maximum variation. The one shown is the one first encountered.
Pixel code minimum for all grabs	The minimum pixel code value for all pixels in the image over all captures.
Pixel code maximum for all grabs	The maximum pixel code value for all pixels in the image over all captures.

Section 3 – Adjustments

3-1. Processor Drum Temperature

This procedure must be performed whenever the processor assembly or processor drum is replaced, whenever the MPC Board is replaced, or if drum temperatures are suspected of causing image quality problems.

Specification

The temperature measured at the processor drum must be in the range 122.1° – 122.9° C (252° – 253° F).

Special Tools

Temperature meter with probe and block
Service PC with Internet Explorer 4.0 (or higher)

Note

A temperature meter and probe with a bar type element must be used to perform this procedure. Probes with circular type elements will not provide accurate readings. The temperature meter and probe must be calibrated together as a pair at least once per year. If the probe breaks, a new probe and the meter must be sent in for calibration. Refer to paragraph 5-2 for details.

Note

The temperature meter must be at room temperature when performing this procedure. If the meter has been brought in from a hot or cold vehicle, allow it to acclimate to room temperature before use.

Measurement Setup

1. Power up and allow the imager to warm to operating temperature (READY).
2. Lift the upper hood and set the Service Switch in the Service position.
3. Prepare the temperature meter for use as follows:
   a. Install the block on the temperature meter probe as shown in Figure 3-1.
   b. Clean the probe with alcohol.
   c. Set the temperature meter to display in Celsius (C).

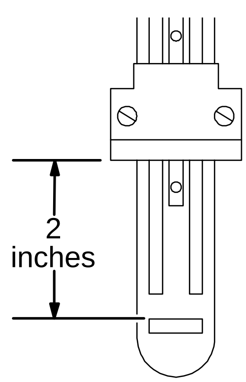


Figure 3-1. Positioning the Temperature Probe Block

Measurement

1. Release the processor cover clamps.
2. Remove the two attaching screws, and remove the processor left side plate (see Figure 3-2).

Caution

Hot Surface

The processor drum and rollers are hot. Take care when working in the area of the processor.

3. Lift the processor cover slightly and insert the temperature meter probe under the cover at the center of the drum as shown in Figure 3-2. Position the probe block just below the cover handle (see Figure 3-2).
4. Lower the cover to secure the probe in place.
5. Allow the temperature reading on the meter to stabilize. The meter should indicate 122.1° to 122.9°. If it does not, perform the following adjustment.

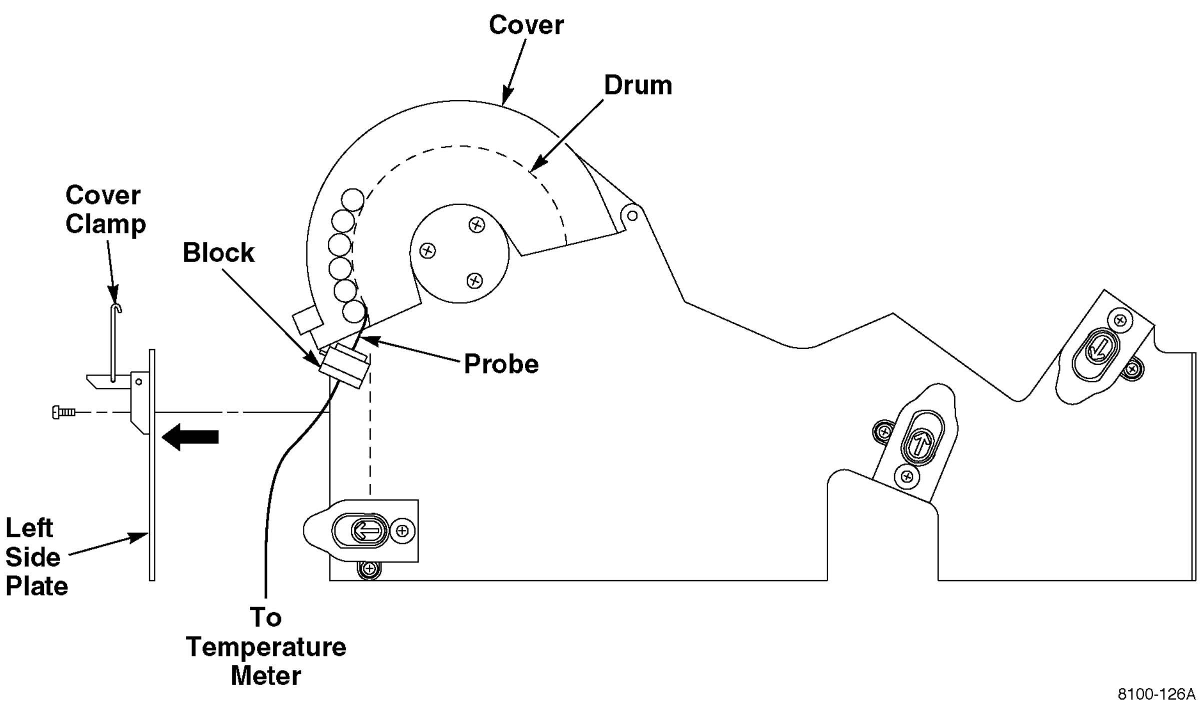


Figure 3-2. Positioning the Temperature Probe

Adjustment

1. Connect your Service PC to the **DryView** 8100. Then power up the PC and use Internet Explorer to access the **DryView** 8100 web page.
2. Click on **Authorized Field Engineer**, then **Continue**.
3. Enter your user name and password.
4. From the MPC Main Menu, select **Configuration**.
5. Select **Processor**. The **Processor Configuration** screen will display the current temperature.

Processor Temperature	122.44 degrees C
Temperature Offset	–0.58 degrees C
Processor Set Point	122.50 degrees C

6. Select **Calibrate Processor Temperature**.
7. On the **Processor Temperature Calibration** screen, enter the temperature measured by the meter.
8. Click the **Perform Calibration** button. The MPC software will adjust the drum temperature to the set point.
9. Click the **Manual Refresh** button to observe the temperature change on the **Processor Configuration** screen. Allow time for the adjustment to occur. (The time will vary, depending on how far out of spec the measured temperature was.)
10. When MPC indicates that the temperature is in spec, check drum temperature again with the meter to confirm the adjustment.

Note

The adjustment process may have to be repeated to obtain proper drum temperature.

3-2. Processor Drum RTD

Caution

The following calibration procedure is done at the manufacturing site, and should rarely have to be performed in the field. It is included here for reference. DO NOT perform this procedure unless directed to do so by service engineering. Misadjustment can cause additional machine problems.

Specification

Output of the Voltage to Frequency Converter on the MCS Board (TP7) is 99.5 to 100.5 Khz.

Special Tools

Calibrated digital multimeter with frequency measurement capability (e.g., Fluke 87) or an Oscilloscope

Adjustment

1. Remove the rear panel and set the Service Switch in the Service position.
2. With power off, remove the connector plug from J17 on the MCS board. (This disconnects the RTD from the circuit.)
3. Remove jumper JP7 from the NORM position and place it in the CAL position (see Figure 3-3).
4. Connect the digital multimeter (set to measure frequency) or a scope to TP7 on the MCS Board.
5. Adjust pot VR1 on the MCS board so that the measured frequency is 99.5 to 100.5 KHz.
6. Power off. Then replace jumper JP7 in the NORM position, reconnect the RTD connector plug to J17, set the Service Switch to its normal operating position, and replace the rear panel.

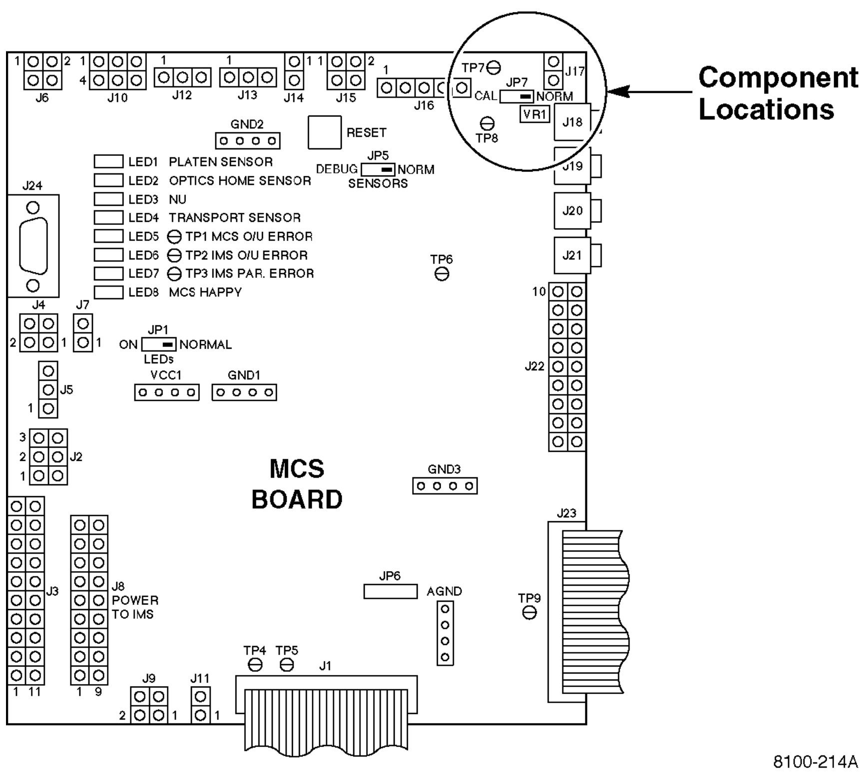


Figure 3-3. Calibrating the Processor Drum RTD

3-3. Processor Film Diverter Assembly (Stripper)

Specification

Gap between diverter blade and drum end caps must be 0.015 to 0.020 inch (0.38 to 0.50 mm).

Required Tools

Feeler gauges
M2.5 Allen wrench

Adjustment

1. Power down. Then raise the upper hood and release the two drum cover latches.

Caution

Hot Surface

The heat shield and the surface of the processor drum may be hot. Take care in the following procedure.

2. Lift the heat shield to gain access to the film diverter attaching screws (see Figure 3-4).
3. Loosen the two diverter attaching screws.
4. Lower the heat shield and open the drum cover.
5. Set the gap between the diverter and drum end caps to 0.015 to 0.020 inch (0.38 to 0.50 mm). Rotate the drum and remeasure to ensure gap consistency around the drum.

Note

Reposition the drum cover and heat shield as necessary in the following steps.

6. Tighten the two attaching screws.
7. Verify the gap. Adjust as necessary to achieve the specification.

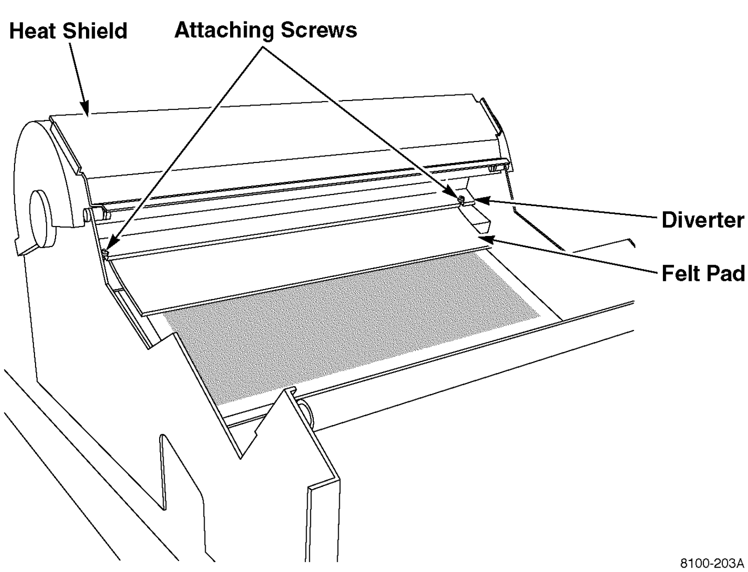


Figure 3-4. Adjusting the Film Diverter Blade Gap

3-4. Optics Translation Speed and SOP Delay

This adjustment must be performed if any of the following is replaced: the translation motor, the film centering motor, the optics home sensor, or the optics module. If translation speed is too fast, the image may appear stretched. If Start of Page (SOP) is out of adjustment, the image will be shifted right or left on the page.

Specification

- Left and right margins on the page must be equal, at 7 mm each.
- Image must not appear stretched or shortened.
- No clear margins should show on the sides of the film.

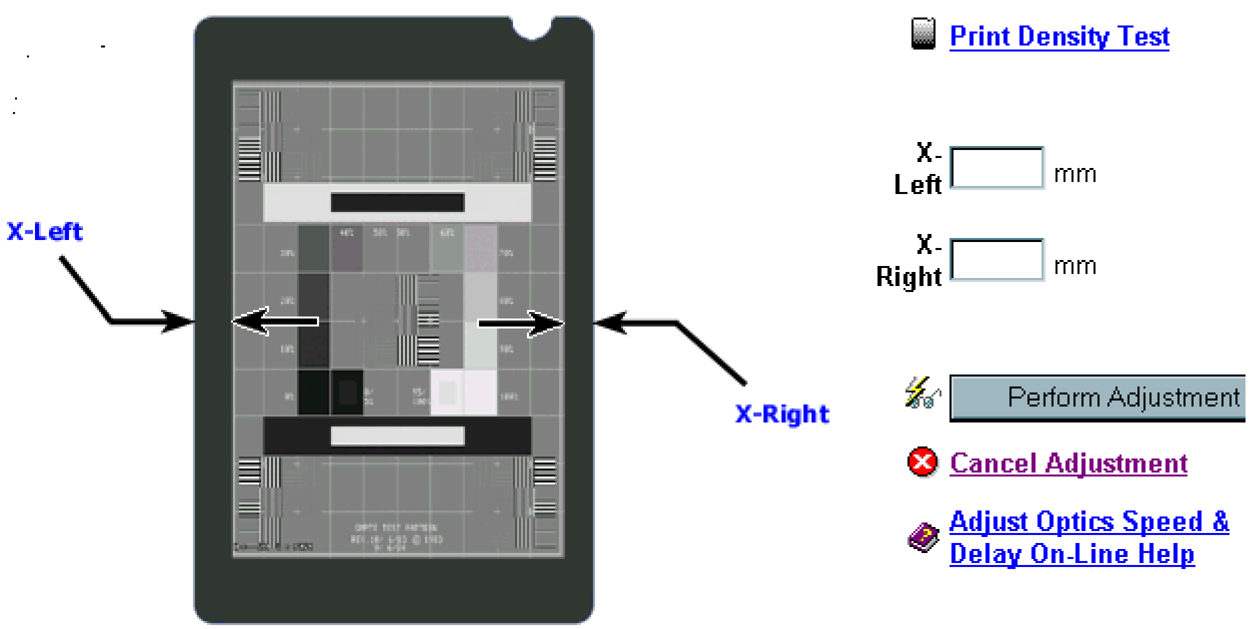
Special Tools

Service PC with Internet Explorer 4.0 (or higher)

Metric ruler with millimeter units

Preliminary

1. Connect your Service PC to the **DryView** 8100. Then power up the PC and use Internet Explorer to access the **DryView** 8100 web page.
2. Click on **Authorized Field Engineer**, then **Continue**.
3. Enter your user name and password.
4. From the MPC Main Menu, select **Configuration**.
5. From the **Configuration** menu, select **System**.
6. From the **System Configuration** menu, set **Maximum Imagable Columns** at **4361** (side format).
7. Return to the **Configuration** menu and select **Optics**.
8. From the **Optics Configuration** menu, select **Adjust Speed & Delay**. The following screen will display:



Measurement

Preliminary

1. If the image is offset to the left or right so far that the margin is cut off, center the image approximately as follows:
   a. Enter a negative value (e.g., –3 mm) in the **X-Left** or **X-Right** box, as appropriate.
   b. Click on the **Perform Adjustment** button.
   c. Enter a new value (+ or –, as necessary) to approximately center the image.

Fine Measurement

1. Click on **Print Density Test** to print a density test sheet.
2. At the center of the film from top to bottom (as shown in the illustration) use a ruler calibrated in millimeter units to measure **X-Left** (distance between the edge of the film and the edge of the frame).
3. Enter the measured value in the **X-Left** box on the screen.
4. Use the ruler to measure **X-Right** directly across from where you measured the left margin on the film.
5. Enter the measured value in the **X-Right** box on the screen.

Adjustment

1. Click on the **Perform Adjustment** button. (MPC will automatically adjust optics speed and SOP delay.)
2. After the adjustment is performed, click on **Print Density Test** to print a new density test sheet.
3. Check the test sheet to confirm that the margins are according to specification.

3-5. Densitometer Reference Level

If the densitometer board or the light source board is replaced, the light source reference level must be checked and adjusted.

Specification

Reference level must be within the range shown on the **Densitometer Configuration** Screen in MPC. Target value is 32500 (hex).

Special Tools

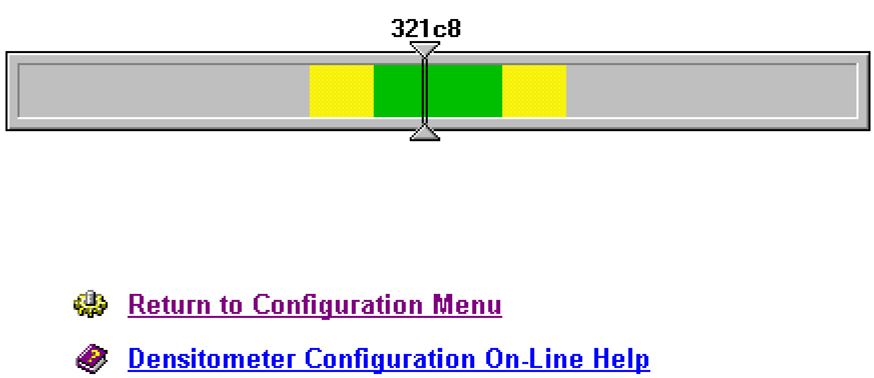
Service PC with Internet Explorer 4.0 (or higher)
Pot Adjustment Tool

Preliminary

Note

The following procedure should be performed in subdued lighting. Make the area as dark as possible. Also, do not attempt the procedure while the machine is in a print cycle.

1. Connect your Service PC to the **DryView** 8100. Then power up the PC and use Internet Explorer to access the **DryView** 8100 web page.
2. Click on **Authorized Field Engineer**, then **Continue**.
3. Enter your user name and password.
4. From the MPC Main Menu, select **Configuration**.
5. From the **Configuration** Menu, select **Densitometer**. The Densitometer Configuration Screen shown below will display. (You may have to wait up to 5 minutes for the full screen gauge to display.)



Adjustment

1. Lift the upper hood.
2. Remove four screws attaching the densitometer module and slide the module out about 3 inches to access the light source board (see Figure 3-5).
3. Adjust pot R3 on the light source board as follows:
   - For current light source boards (see Figure 3-5): Turn R3 (a multi-turn pot) fully CCW until it clicks.
   - For early version light source boards: Turn R3 (a one-turn pot) fully CW.

Caution

In the following procedure DO NOT allow the reference bar to move **past the center of the gauge**. Also, regardless of the Revision level of the board, it is critical that the reference bar **never moves from right to left**. If it does, the A/D converter is overdriven and will produce negative readings from a cal film, resulting in a failed calibration.

4. While observing the reference level gauge on the screen, slowly adjust R3 as follows so that the reference bar begins to move toward the center of the gauge.
   - For current boards (see Figure 3-5): Slowly turn R3 CW. (It will require several turns.)
   - For early version boards: Slowly turn R3 CCW. (This is a one-turn pot.)

Note

It will take up to a minute for the reference bar to complete moving in the adjustment.

5. Center the reference level bar in the green and yellow areas on the gauge. Adjust until the gauge value is as close to 32500 (hex) as possible.
6. Close the upper hood and verify that the reading does not change significantly.
7. Open the hood and reattach the densitometer module to the frame (four screws).
8. After the adjustment, select **Return to Configuration Menu** to exit.

Caution

If the Densitometer Configuration Screen is active any time during calibration or normal printing, Dpatch timeouts or calibration errors will occur, resulting in calibrations and job reprints.

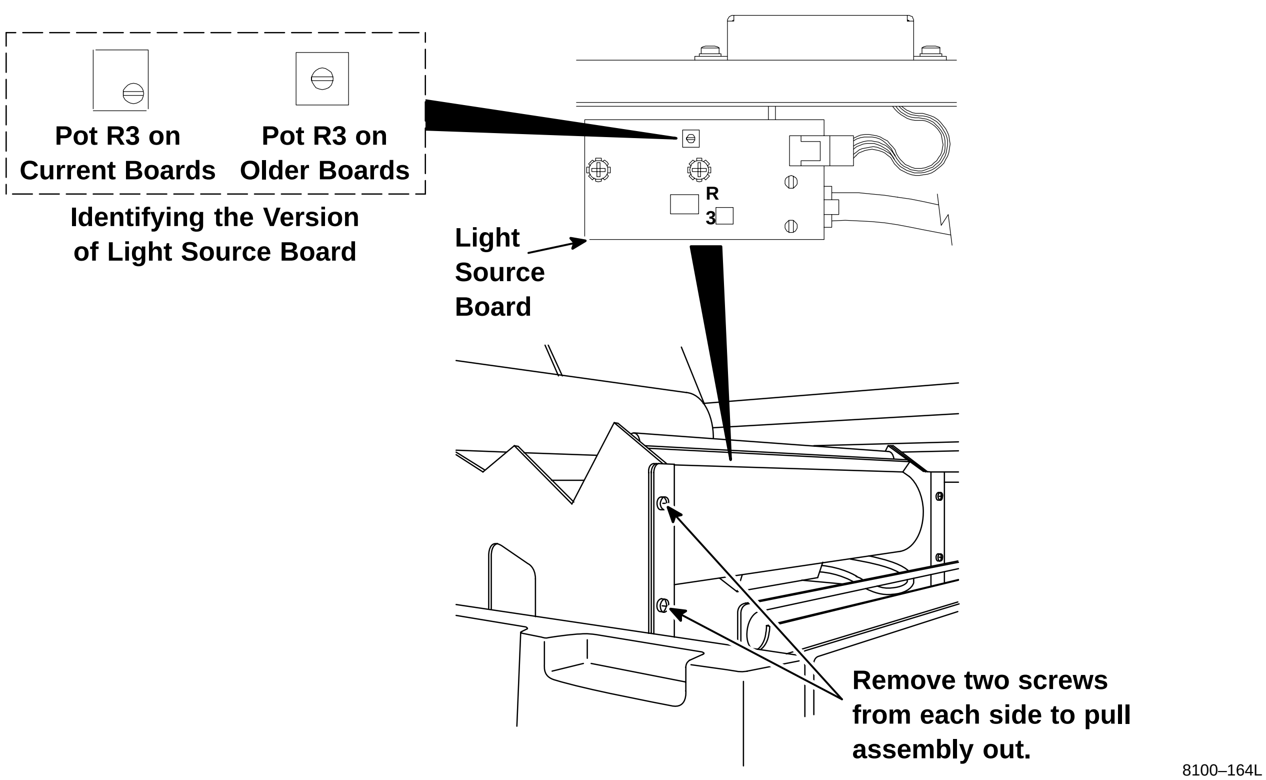


Figure 3-5. Adjusting Densitometer Reference Level

3-6. Laser Dynamic Range

This procedure should be performed whenever the MCS Board is replaced, and whenever EC604 occurs.

Laser dynamic range is automatically tested at power up and whenever a test calibration occurs. It is defined as the ratio of maximum laser power minus power monitor offset to minimum laser power minus power monitor offset (Max power – Offset)/ (Min power – Offset). Power monitor offset is the power monitor output value when the laser is turned off. A laser dynamic range failure can be caused by a bad power monitor offset value.

Caution

Do not perform this procedure unless you are sure it is required. It should be performed only when an MCS Board has been replaced, or EC604 has occurred.

Note

This procedure cannot be run while the machine is in Service mode. (With the machine in Service mode, the laser dynamic range is 1.)The upper hood, front door and rear service panel must be closed for the adjustment to work.

Specification

Laser dynamic range between 100 and 200

Required Tools

Service PC with Internet Explorer 4.0 (or higher)

Measurement

1. Connect your Service PC to the **DryView** 8100. Then power up the PC and use Internet Explorer to access the **DryView** 8100 web page.
2. Click on **Authorized Field Engineer**, then **Continue**.
3. Enter your user name and password.
4. From the MPC Main Menu, select **Configuration**.
5. From the **Configuration** menu select **Optics**.
6. Check that the laser dynamic range is between 100 and 200. If it is, do not adjust.

Adjustment

1. From the **Optics Configuration** menu, select **Adjust Laser Dynamic Range**. The **Adjust Laser Dynamic Range** screen will display.
2. Click on **Start Adjustment** to initiate automatic adjustment through the MPC.

Note

The adjustment may take a few minutes.

3. After the adjustment is completed, run a calibration print before running any other print.

Caution

If a print is initiated before calibration, EC622 (Media LUT Non-Monotonic) will occur.

3-7. Interpolation Values for Smooth and Sharp Via the DryView V2 Keypad

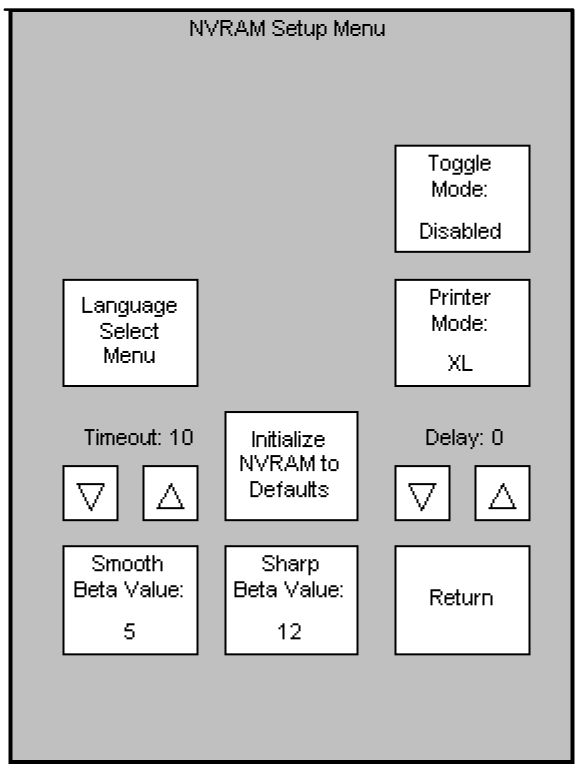
The parameters listed below are configurable through the NVRAM Setup Menu of the **DryView** V2 Keypad:

Parameter	Default Value
Smooth Beta Value	15
Sharp Beta Value	2

Procedure

Enter new configuration values for smooth and sharp, or enter the default values as follows. (If current values are missing or wrong, and you don't know the optimum values, enter the default values.)

1. On the **DryView** V2 Keypad, simultaneously press and hold the **Print**, **Erase**, and **Sequential Store** keys to display the NVRAM Setup Menu (see illustration below).
2. Use the **Smooth Beta Value** key to achieve the desired number on the key display.
3. Use the **Sharp Beta Value** key to achieve the desired number on the key display.



4. To return to the Main Menu, press **Return**.

Section 4 – Disassembly/Reassembly

4-1. Front Door and Rear Panel Assemblies

4-1-1. Front Door Filter

1. Open the front door.
2. Remove six attaching screws (Figure 4-1).

Warning

When the front door is open, all motors and the laser are disabled, but power remains applied to the system.

3. Pull off the cover (with gasket and filter retainer).
4. Remove the filter.

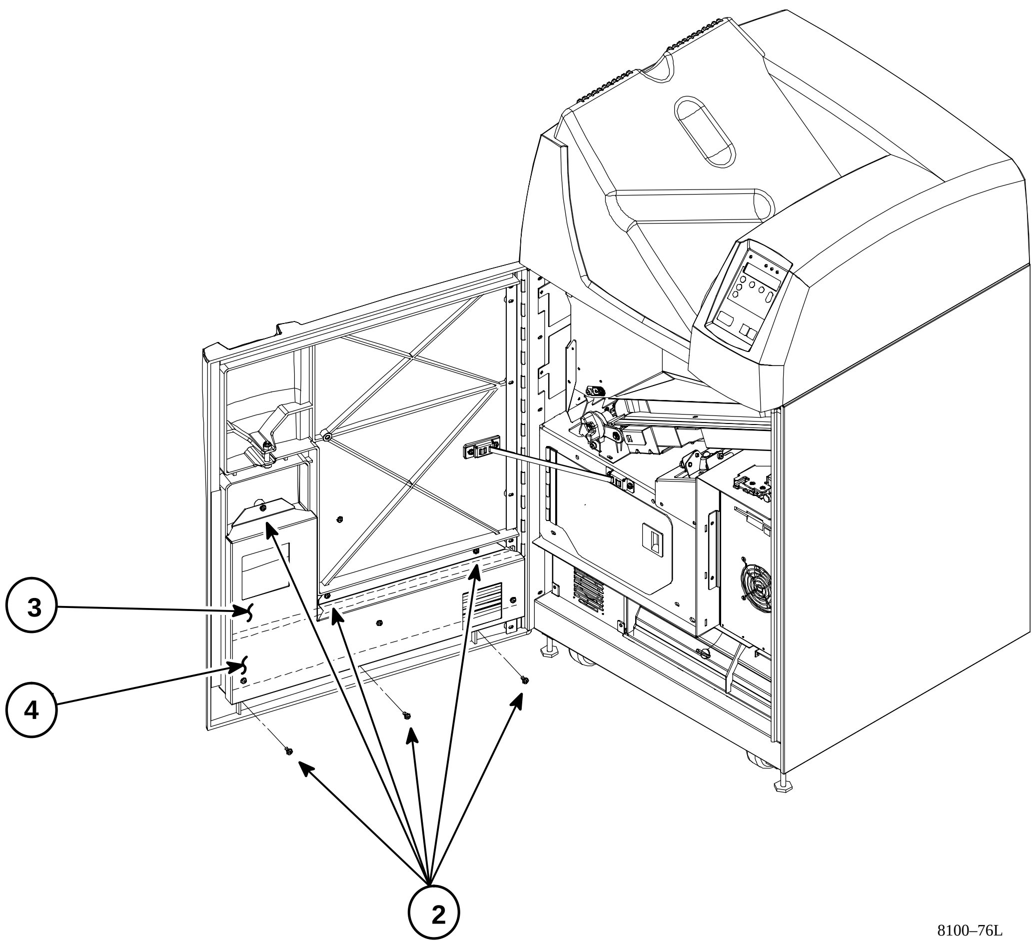


Figure 4-1. Replacing the Front Door Filter

4-1-2. Rear Panel

1. Press the **Open Door** key to close the film cartridge.
2. Remove nine attaching screws from the rear panel (Figure 4-2).

Warning

When the rear panel is removed, all motors and the laser are disabled. However, power remains applied to the system. If you need to activate the motors, actuate the Service Switch. Be aware that hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

3. Pull the top of the rear panel back, and lift up to remove the panel feet from the slots in the machine base.
4. Set the rear panel aside.

Note

During reassembly ensure that the rear cover interlock is engaged before tightening the screws.

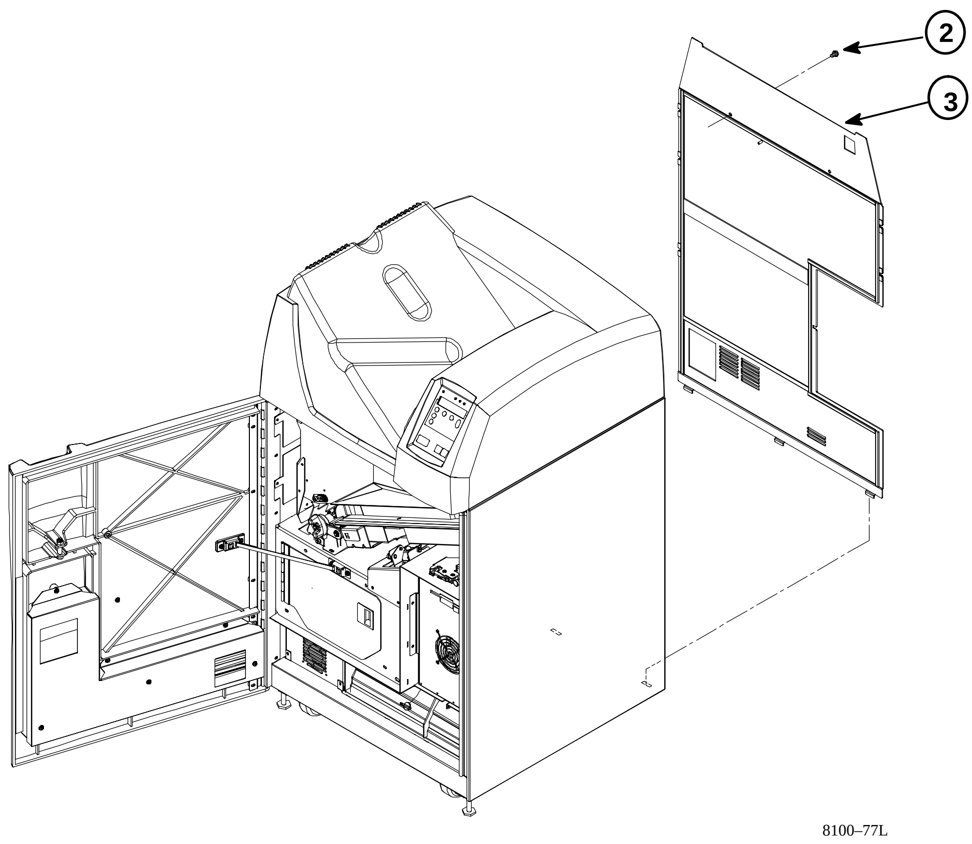


Figure 4-2. Removing the Rear Panel

4-2. Film Processor Assembly

Caution

Any circuit board that is replaced in the **DryView** 8100 must be returned to Kodak for rework or disposed of properly. Printed circuit boards contain lead.

4-2-1. Processor Interface Board

1. Press the **Open Door** key to close the film cartridge.
2. Remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

3. Open the machine upper hood and remove the back panel.
4. Disconnect the drum cable from the cover box over the Processor Interface Board (Figure 4-3).
5. Remove four attaching screws from the cover box.
6. Lift the box free from the Processor Interface Board.
7. Remove four attaching screws from the corners of the board, and remove the board.

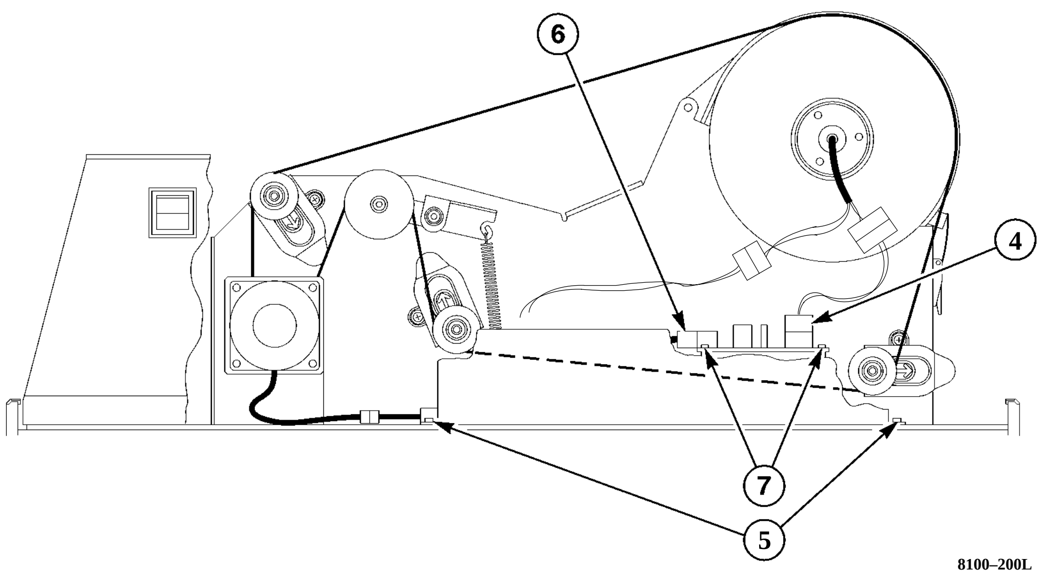


Figure 4-3. Removing the Processor Interface Board

4-2-2. Processor Drum

Disassembly

1. Remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Open the machine upper hood.
3. Disconnect the two cables extending from the drum (See View A in Figure 4-4).
4. Lift the belt tensioner (View A) to provide slack in the belt, and remove the belt from the drum pulley.

Caution

Hot Surface

When the imager is initially powered down, the processor drum and rollers are hot. Take care when removing the drum.

5. Release the clamps (View B) from the cover of the processor and open the processor cover.

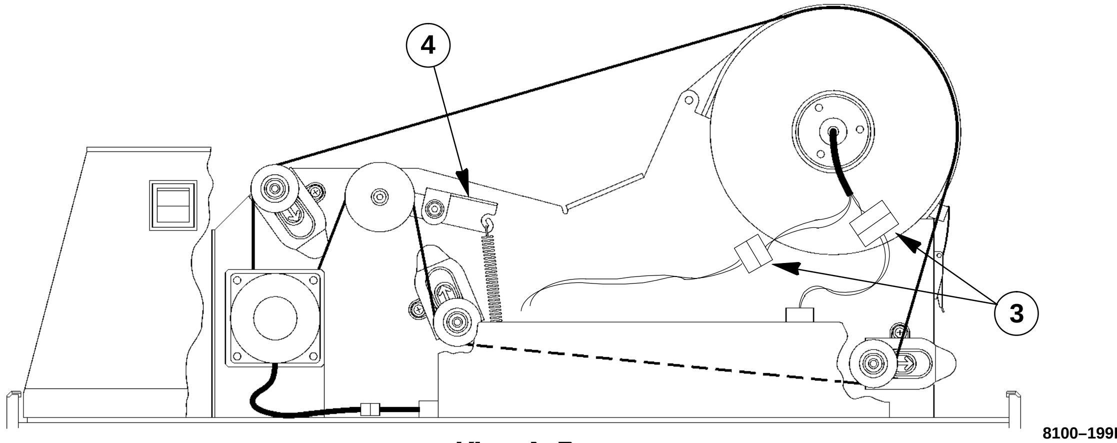
Caution

The surface of the drum is easily damaged by fingernails and jewelry. Handle the drum with one hand on the large pulley and the other hand on the opposite endcap. Do not touch the silicone surface of the drum.

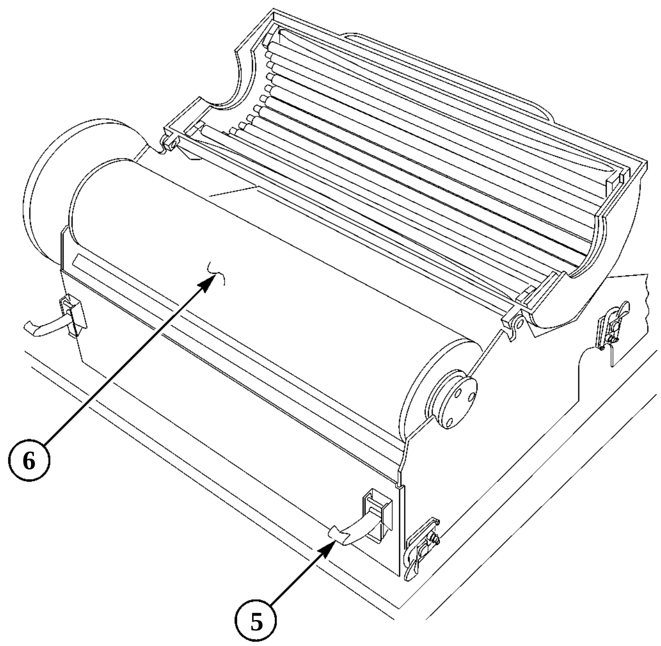
6. Lift the drum from the processor and lay it on a flat, stable surface. (The pulley will prevent the silicone surface of the drum from touching the flat surface.) As an option, you can place the drum in the cradle made by the processor cover assembly.

Note

Whenever a new drum is installed, the processor temperature adjustment must be performed (procedure 3-1).



View A. Rear



View B. Front

8100-70A

Figure 4-4. Removing the Processor Drum

4-2-3. Processor Rollers and Related Parts

Disassembly

1. Remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Open the machine upper hood and allow the processor to cool before proceeding.

Caution

Hot Surface

When the imager is initially powered down, the processor drum and rollers are hot. Take care when removing the rollers.

3. Release the two clamps and open the processor cover.
4. To remove the rollers, simply lift each roller from the retainer clips at each end (Figure 4-5).

Note

The bearings on the ends of each roller are loose. Take care not to lose the bearings or the springs that they mount on in the retainer clips.

Reassembly

1. Install a bearing on each end of the roller, and make sure each retainer clip includes a spring.
2. Insert the bearings (with roller) into the retainer clips as shown in the inset in Figure 4-5. Check that: (a) each roller rotates freely, (b) each bearing is free to slide against the spring in the retainer, and (c) the springs are not bent.

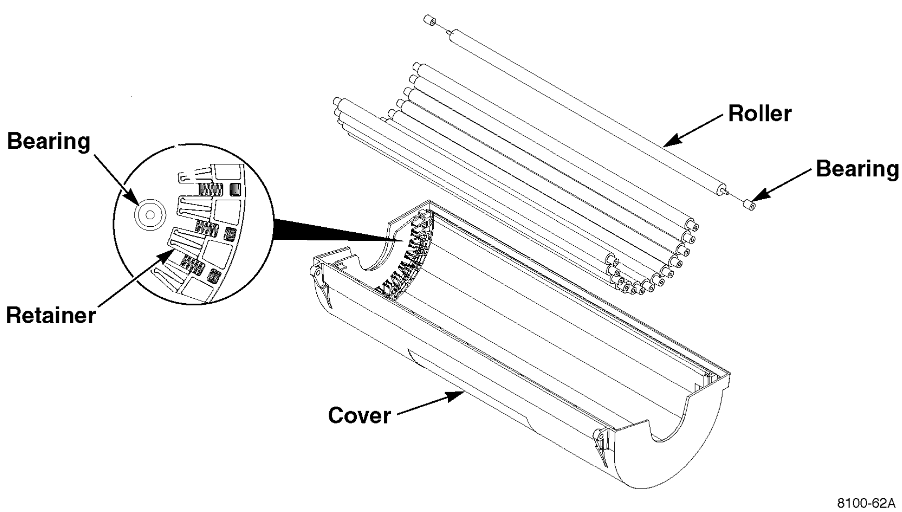


Figure 4-5. Removing the Processor Rollers

4-2-4. Processor Motor (Step 5)

1. Open the front door to close the film cartridge. Then remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Open the machine upper hood and remove the back panel.
3. Lift the belt tensioner (Figure 4-6) to provide slack in the belt, and remove the belt from the motor pulley.
4. Disconnect the motor electrical plug from the cable (Figure 4-6).
5. Remove four screws and remove the processor motor.

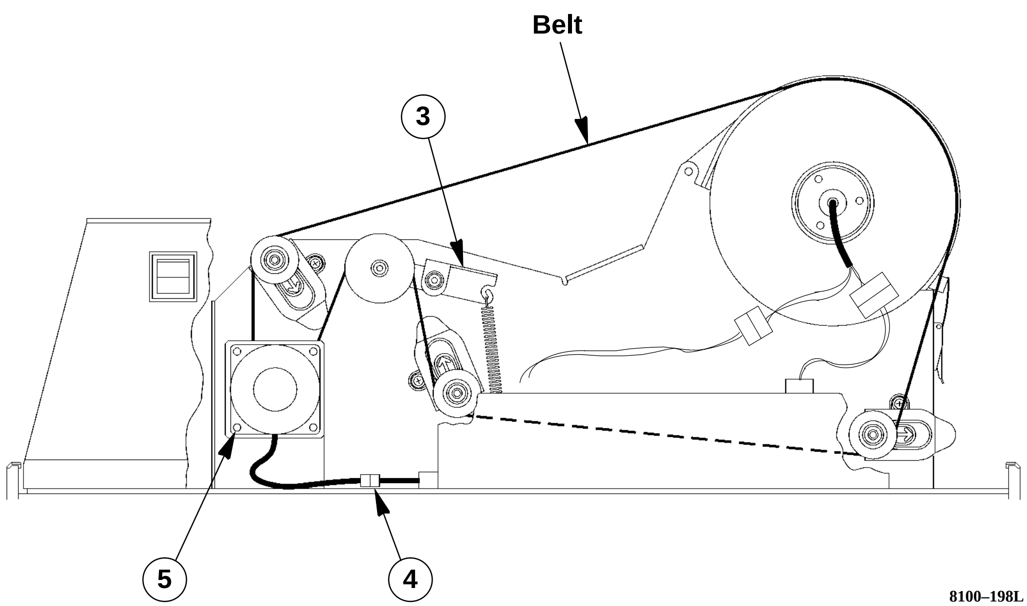


Figure 4-6. Removing the Processor Motor

4-2-5. Processor Film Diverter Assembly

1. Remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Open the machine upper hood.

Caution

Hot Surface

When the imager is initially powered down, the processor drum and rollers are hot. Take care when working in the area of the processor.

3. Lift up the heat shield (Figure 4-7).
4. Remove two screws and remove the film diverter assembly (including stripper and felt pad).

Note

When you replace a film diverter assembly, refer to the adjustment procedure, paragraph 3-3.

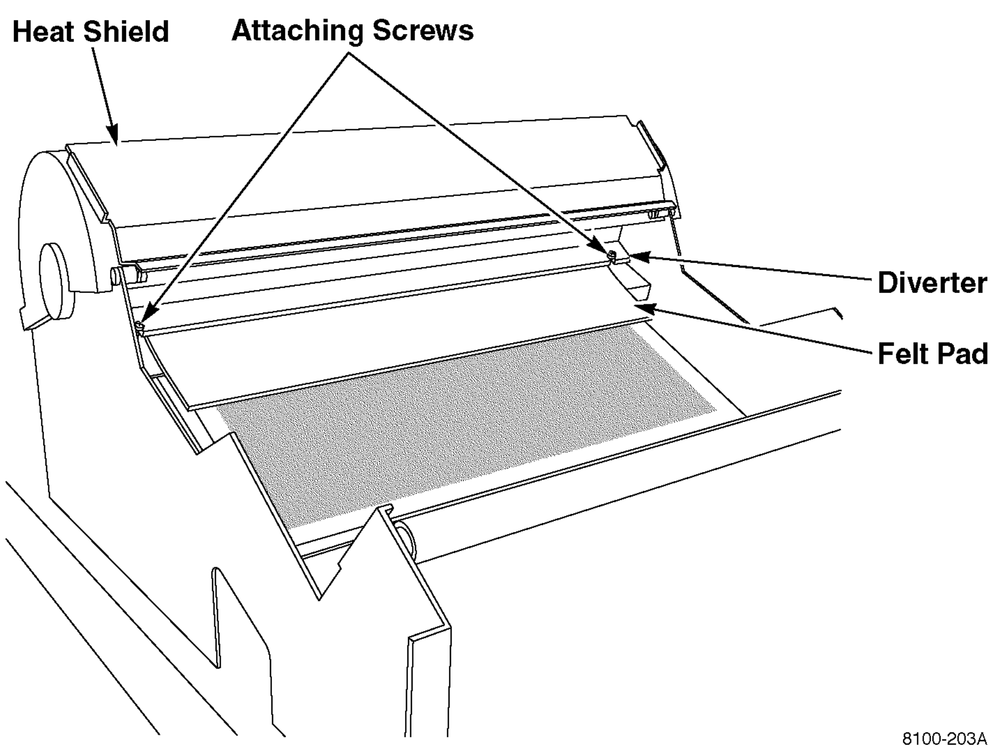


Figure 4-7. Removing the Processor Diverter and Felt Pad

4-3. Roller Set Assemblies

1. Open the front door to close the film cartridge. Then remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Open the machine upper hood and remove the machine back panel (paragraph 4-1-2).
3. Lift the belt tensioner and remove the transport/processor drive belt (Rear View in Figure 4-8).
4. For the transport roller assembly located at the rear base of the processor only: Remove two screws and remove the back latch plate (Rear View).
5. For each transport roller set asembly:
   a. Remove one attaching screw from each end of the assembly (Rear View and Front View).
   b. Pull the roller assembly out of its slot (Front View).

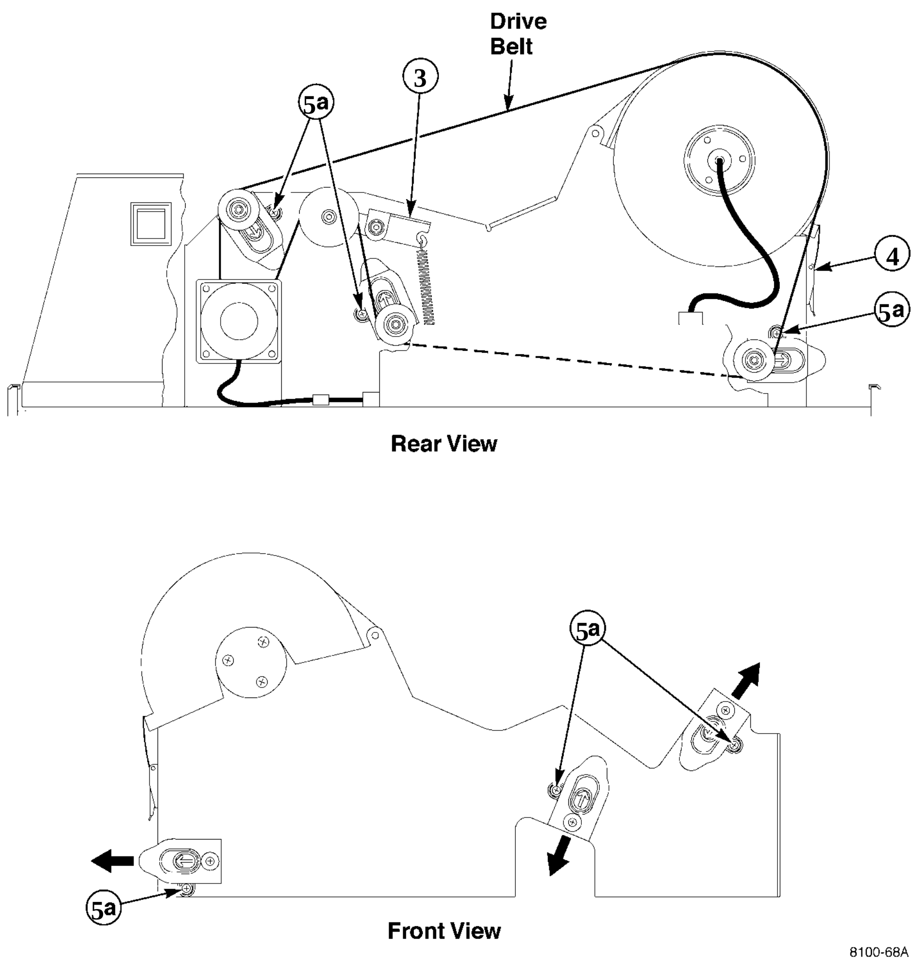


Figure 4-8. Removing the Transport Roller Set Assemblies

4-4. Densitometer Assembly

4-4-1. Densitometer Module

1. Remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Open the machine upper hood.
3. Remove four attaching screws (Figure 4-9).
4. Slide the Densitometer Module out far enough to gain access to the RJ45 plug on the right side of the densitometer box.
5. Disconnect the RJ45 plug from the densitometer box.
6. Remove the module and set it on a work bench.

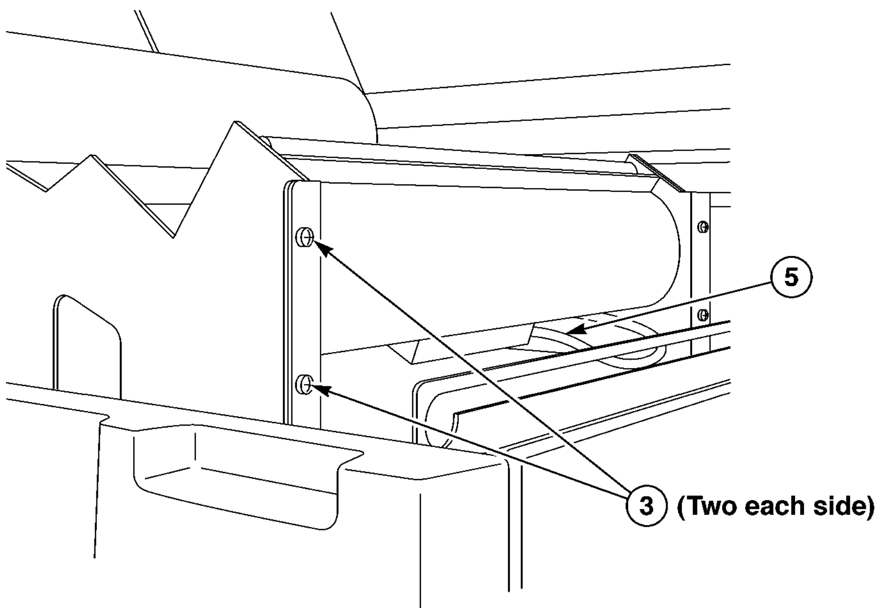


Figure 4-9. Removing the Densitometer Module

4-4-2. Densitometer/Exit Sensor (S9)

1. Power down and remove the Densitometer Module (4-4-1).

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove the right side screw of the sensor cover box (Figure 4-10).
3. Loosen the left side screw of the cover box and pivot the cover box over and to the left to expose the sensor.
4. Disconnect the insert plug from the sensor connector.

Caution

If the sensor is to be replaced, be very careful not to damage the clips during removal. Also be careful not to damage the fragile actuator of the sensor during disassembly and reassembly.

5. Gently rock the sensor back and forth to disengage its clips from the chassis.

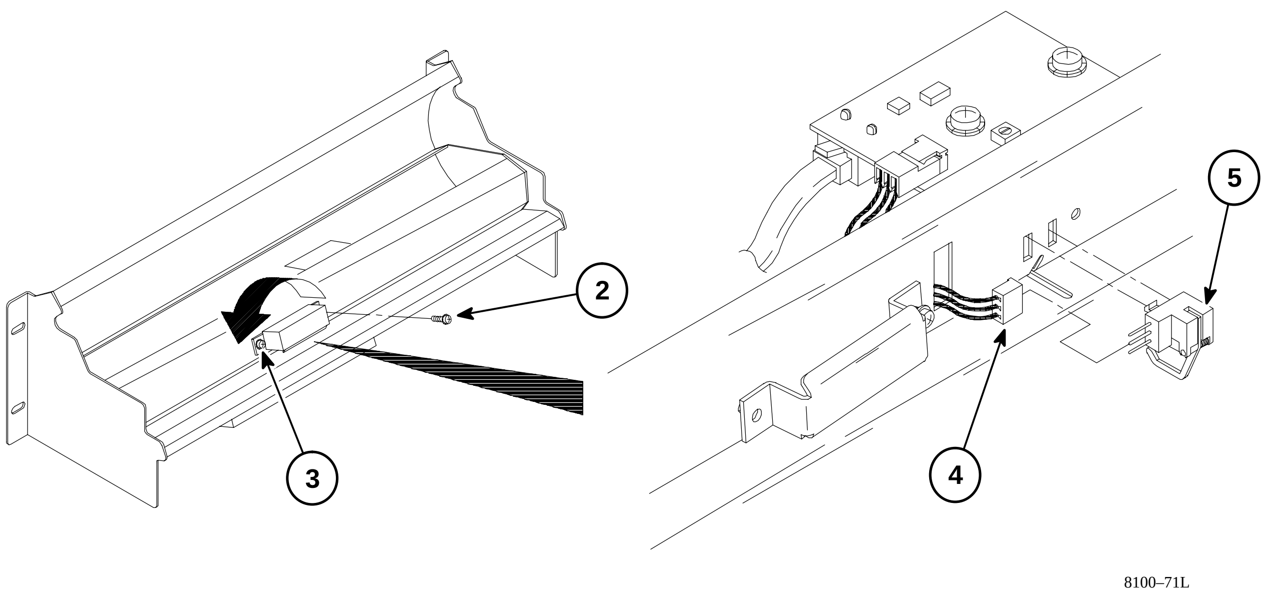


Figure 4-10. Removing the Densitometer/Exit Sensor

4-4-3. Densitometer Light Source Assembly

Caution

Any circuit board that is replaced in the **DryView** 8100 must be returned to Kodak for rework or disposed of properly. Printed circuit boards contain lead.

1. Power down and remove the Densitometer Module (4-4-1).

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Disconnect the two electrical plugs from the board (Figure 4-11).
3. Remove two attaching screws and remove the light source board.
4. After reassembly and reinstallation of the Densitometer Module, adjust the light source reference level as described in paragraph 3-5 in Adjustments.

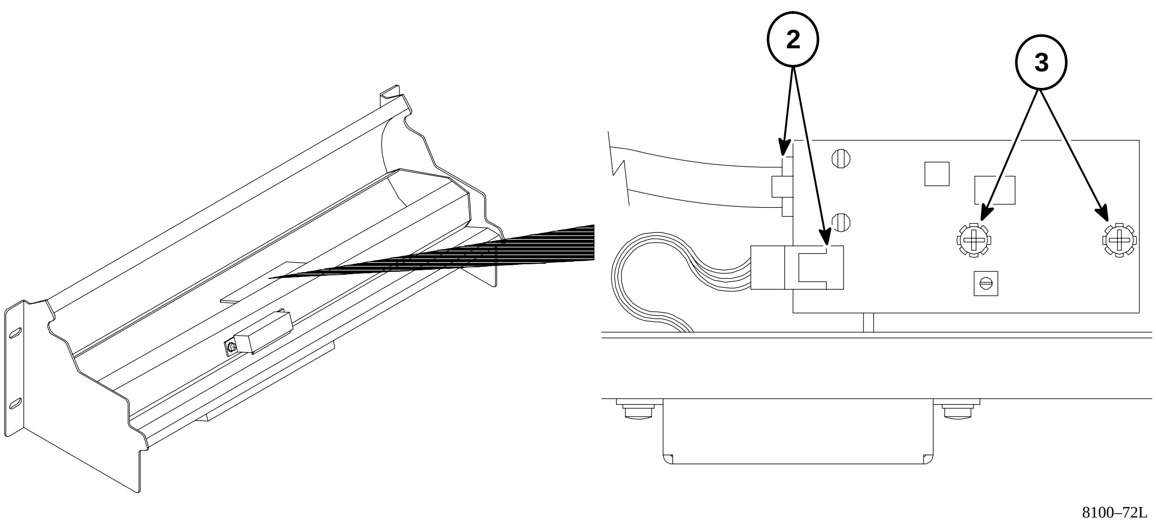


Figure 4-11. Removing the Light Source Board

4-4-4. Densitometer Board

Caution

Any circuit board that is replaced in the **DryView** 8100 must be returned to Kodak for rework or disposed of properly. Printed circuit boards contain lead.

1. Power down and remove the Densitometer Module (4-4-1).

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove four hex nuts and washers and remove the box from the densitometer (Figure 4-12).
3. Disconnect the RJ45 connector from the densitometer.
4. Remove five attaching screws and remove the densitometer board.
5. After reassembly and reinstallation of the Densitometer Module, adjust the densitometer light source reference level as described in paragraph 3-5 in Adjustments.

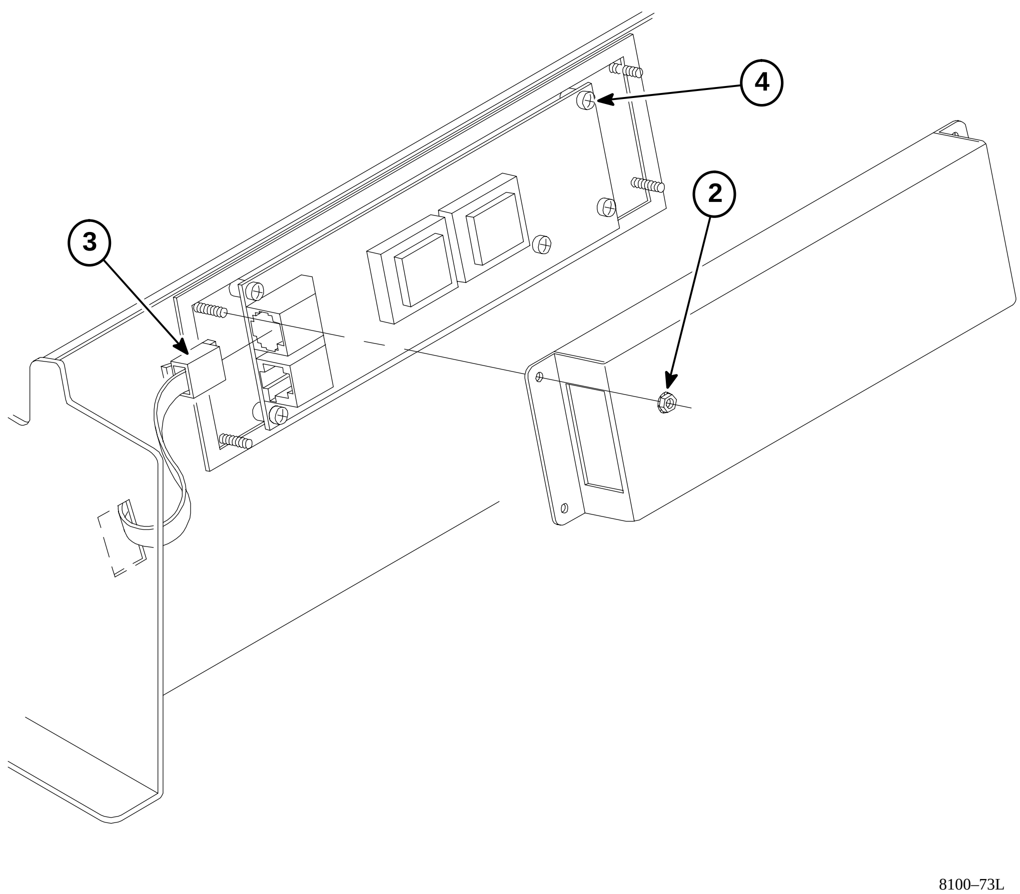


Figure 4-12. Removing the Densitometer

4-5. Local Panel Assembly

Caution

Any circuit board that is replaced in the **DryView** 8100 must be returned to Kodak for rework or disposed of properly. Printed circuit boards contain lead.

1. Remove power and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Open the upper hood.
3. Remove four screws and remove the panel (Figure 4-13).
4. Disconnect one RJ45 plug.

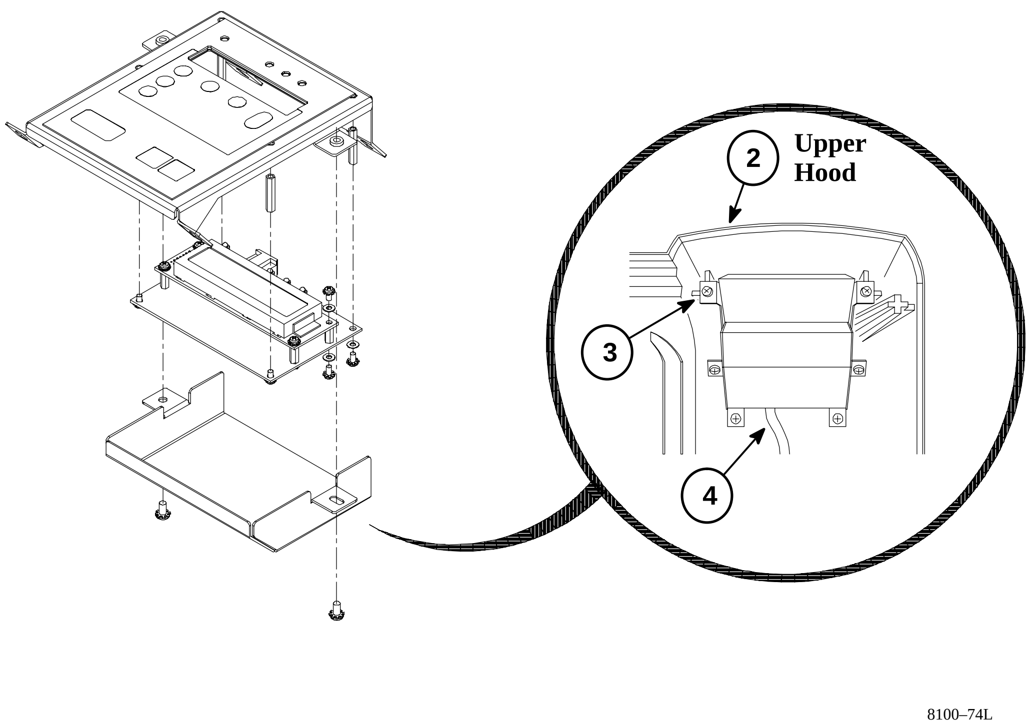


Figure 4-13. Removing the Local Panel

4-6. Film Pickup Assembly

4-6-1. Film Pickup Module

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Open the front door and remove the back panel.
4. Check that the film pickup carriage is in the home (retracted) position (sucker cups are up). If it is not, proceed as follows: While holding the film pickup carriage from the bottom to keep it from dropping, pry the release tab out (see Rear View) to disengage the motor drive gear. Then lift the carriage up to the retracted (home) position, and let go of the release tab.
5. Remove two attaching screws from the front (Front View in Figure 4-14).
6. Disconnect two electrical cables (Rear View in Figure 4-14). (One plugs into the Film Pickup Assembly. The other is the cable to the rollback motor, which should be disconnected to avoid damage to it.)
7. Remove two attaching screws from the back side.
8. The Film Pickup Assembly is hanging from a rod via hooks. With one hand under the heel of the pickup module and the other supporting the top, carefully lift up to remove the top hooks from the rod. Then tip the Film Pickup Assembly slightly to the left and lower it to remove it.

Caution

Be careful in reassembly to avoid damaging wires and connectors.

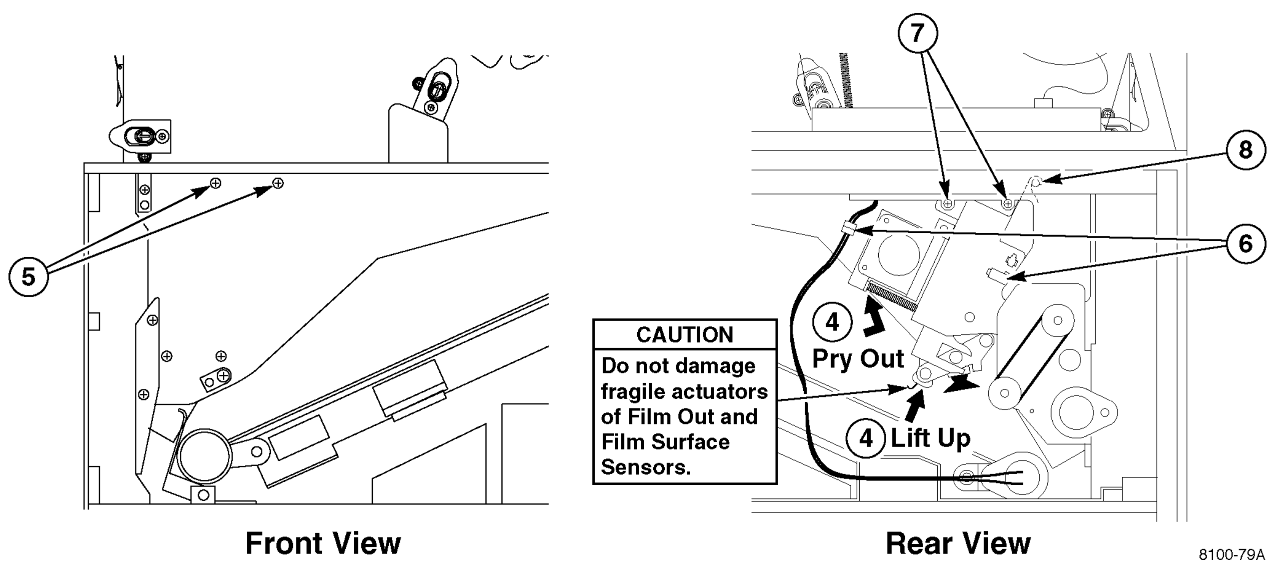


Figure 4-14. Removing the Film Pickup Assembly

4-6-2. Film Pickup Cups

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove each film pickup cup as follows:
   a. Insert a small flat-blade screwdriver into the slot at the center of each cup and turn counterclockwise to remove the cup and hub (Figure 4-15).
   b. Use the flat blade screwdriver to pry the hub from the cup.
4. When reassembling the cups, do not overtighten the hubs.

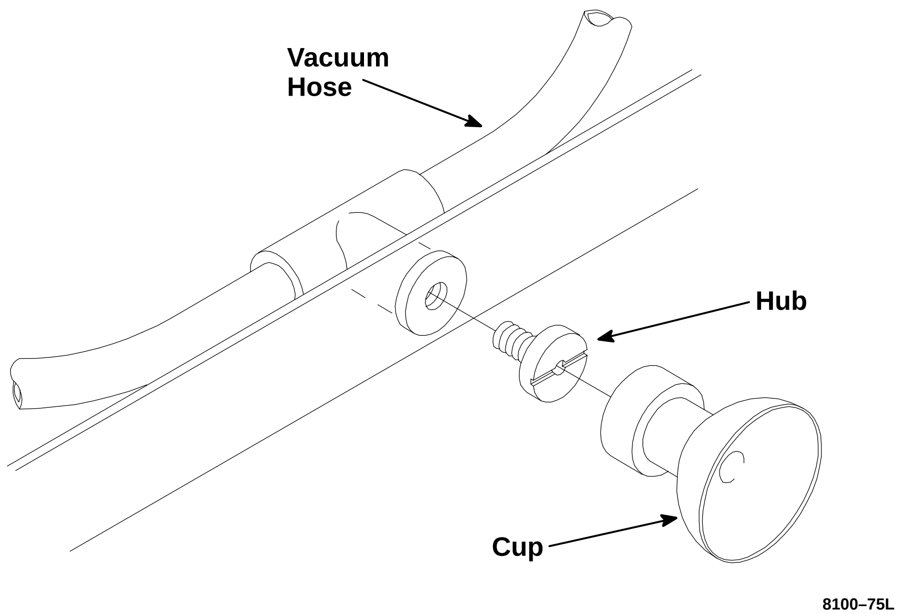


Figure 4-15. Replacing the Pickup Cups

4-6-3. Film Pickup Heel Pad

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Film Pickup Module (4-6-1) and set it on a stable work surface.
4. Carefully peel off the pad that covers the film pickup heel, taking care not to damage the two sensor actuators that extend through the heel (see Figure 4-16).
5. Use alcohol wipes to clean off the adhesive remaining on the heel after the pad is removed. Make sure all the adhesive is removed.

Note

Make sure all the old adhesive is removed from the heel. Check the edges of the heel. If the new heel pad does not adhere properly, it could hang up and cause problems.

6. Install a new pad as follows:
   a. Peel off the protective layer from the adhesive surface (inside) of the pad.
   b. Apply one edge of the pad to the heel, and gradually press the adhesive surface of the pad to the heel, working from one side toward the other side of the heel. Make sure you do not leave any air bubbles between the pad and the heel.

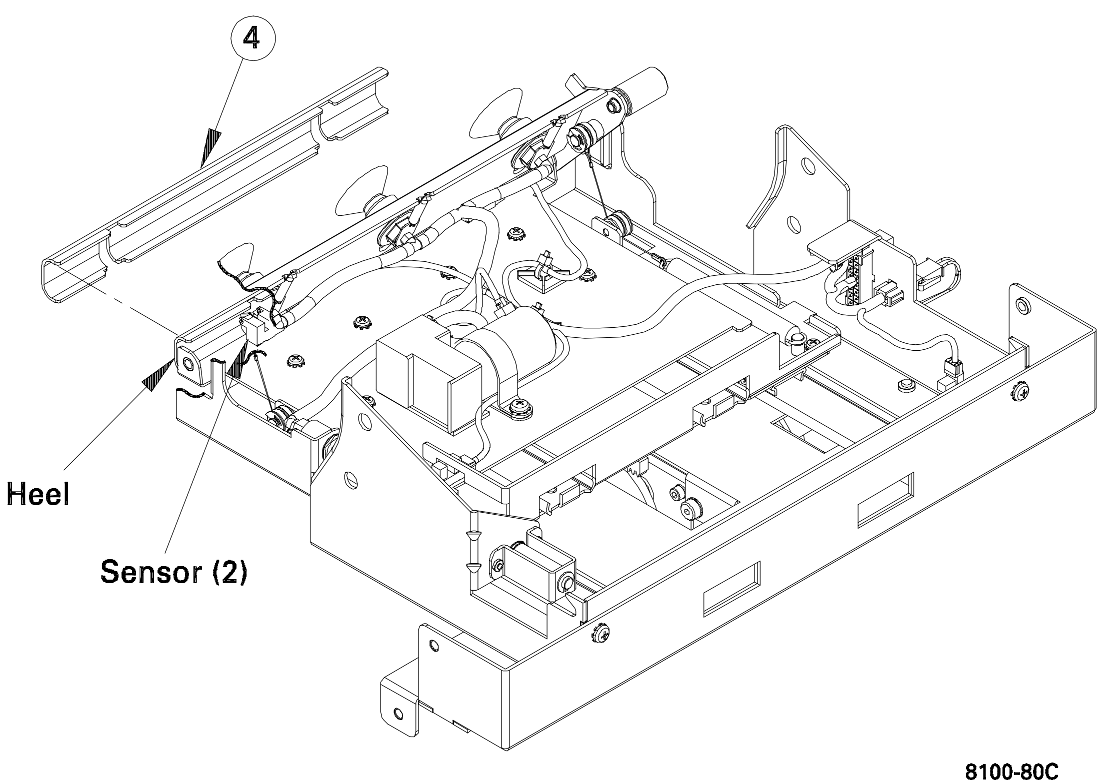


Figure 4-16. Replacing the Pad on the Film Pickup Heel

4-6-4. Film Pickup Optical Sensors (S3, S4, S5, S10)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Film Pickup Module (4-6-1).
4. Position the film carriage as necessary to gain clear access to the sensor (Figure 4-17).
5. Remove the desired sensor as follows:
   a. Disconnect the electrical plug from the sensor.

Caution

If the removed sensor is to be reinstalled, be very careful not to damage the mounting clips during removal. Also be careful not to damage the fragile actuators of Film Surface Sensor S4 and Film Out Sensor S5 during disassembly and reassembly.

   b. Gently rock the sensor back and forth to disengage its mounting clips from the chassis sheet metal.
6. When replacing a sensor, make sure that the sensor clips are properly seated in the sheet metal.

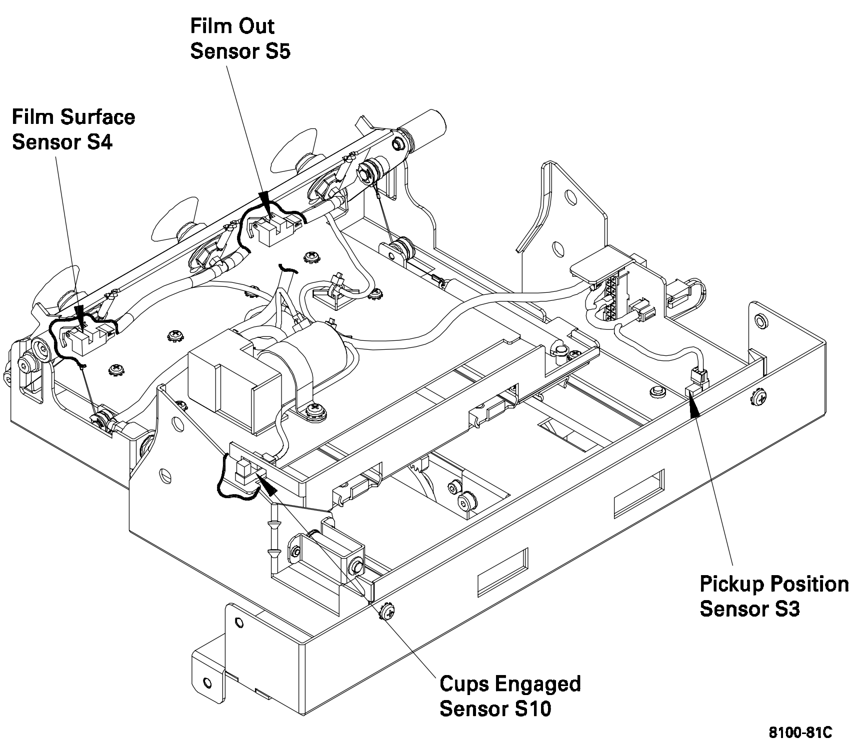


Figure 4-17. Optical Sensor Locations

4-6-5. Film Pickup Motor (DCM2)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Film Pickup Module (4-6-1).
4. Disconnect the electrical plug (Figure 4-18).
5. Remove the spring from the motor bracket.
6. Remove two shoulder screws and washers. (The washers may fall off after the shoulder screws are removed.)
7. Remove the motor.

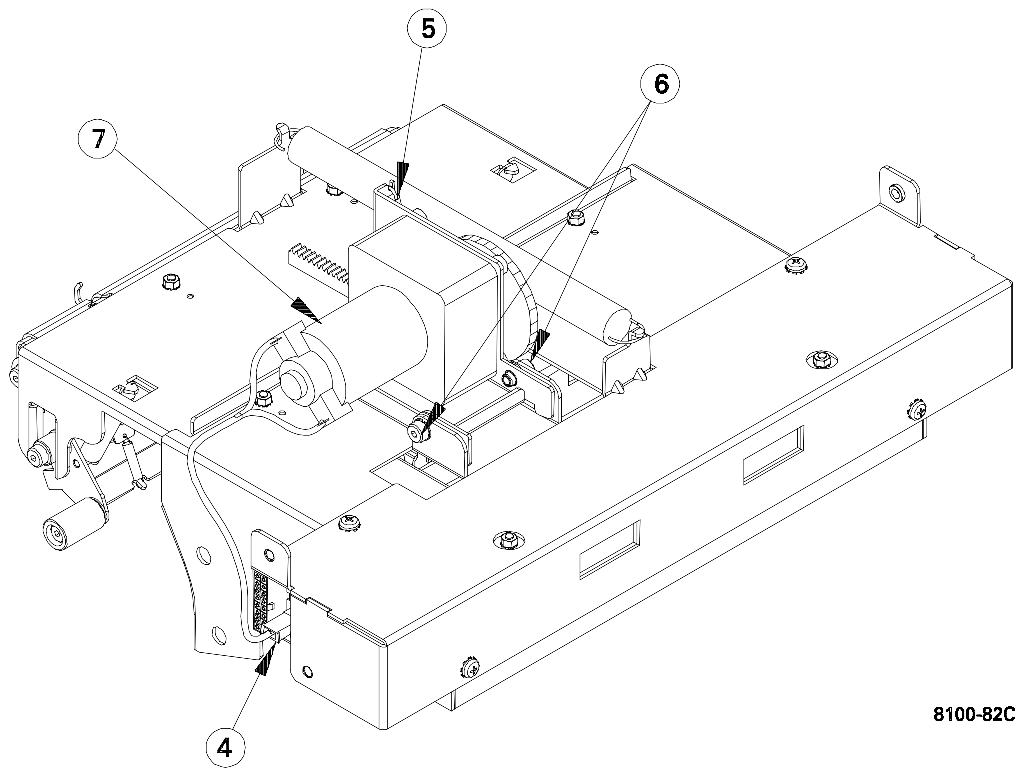


Figure 4-18. Replacing the Pickup Motor

4-6-6. Film Pickup Vacuum Pump

Disassembly

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Film Pickup Module (4-6-1).
4. Disconnect the vacuum hose from the pump (see Figure 4-19).
5. Remove the attaching screw securing the loop clamp, and remove the pump and adhesive foam pad.

Reassembly

1. Before replacing a pump, remove any foam residue from the mounting location and clean the surface.
2. With the loop clamp on the pump, position the pump (with foam pad) to establish the mounting location. (After the pump and foam padding are secured in position in step 3, the loop clamp must be attached with its mounting screw.)
3. Peel the protective cover from the foam and press down to adhere the foam (and pump) to the mounting surface. Then complete reassembly.

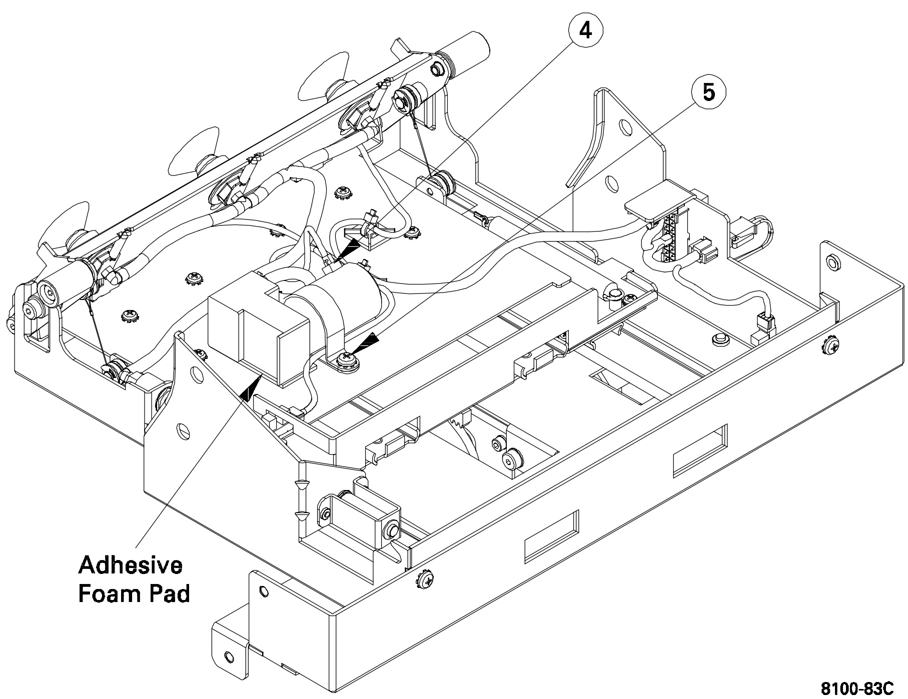


Figure 4-19. Removing the Film Pickup Vacuum Pump

4-7. Rollback Assembly

4-7-1. Rollback Module

Disassembly

1. Remove the supply cartridge.
2. Press the Power Switch OFF, but <u>do not disconnect the power cord</u> as yet.
3. Open the front door and remove the rear panel of the machine.
4. Actuate the Service Switch by unscrewing the actuator bolt (Rear View in Figure 4-20).
5. Press the Power Switch ON while observing the elevator from the front of the machine. The elevator will begin moving to its down position (Front View). (This will take a few minutes.)

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

6. When the elevator is all the way down (sensor blocked), press the Power Switch OFF and disconnect the power cord.
7. Manually turn the rollback knob to move the rollback roller to about the middle of the cartridge tray.
8. Disconnect the electrical plug for the rollback motor (Rear View).
9. Disconnect the plug for the rollback sensors (Rear View).
10. Disconnect the cable plug from the Barcode Reader Board (Rear View).
11. Remove the two screws attaching the base of the Rollback Module (Front View).
12. Remove three screws attaching the top bracket of the module (Front View).
13. Carefully slide the module out the front of the machine and set it on a work surface. (See next page.)

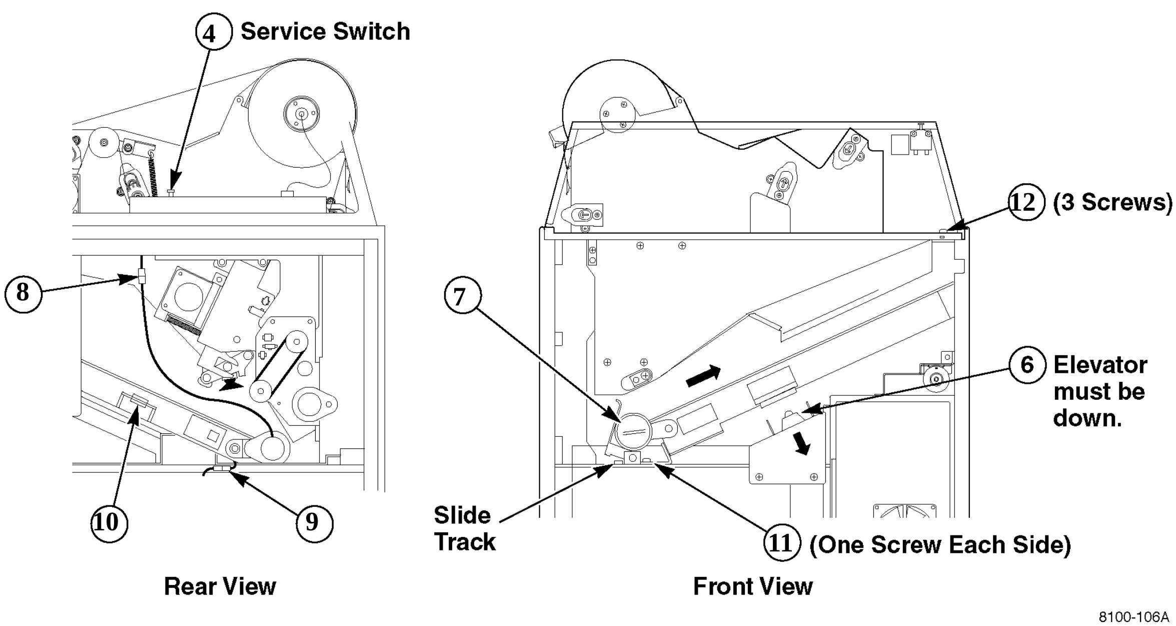


Figure 4-20. Removing the Rollback Module

Reassembly

Reassembly is essentially the reverse of disassembly. Make sure when you install the module that the bottom left of the assembly slides in along the slide track on the base (Front View).

Caution

Take care not to damage wiring when you slide the module in. Make sure the barcode cable is routed properly after reassembly.

4-7-2. Rollback Motor (DCM1)

1. Remove the supply cartridge, power down, and remove the Rollback Module (4-7-1).

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Turn the rollback knob to position the rollback motor for easy access to its attaching screws.
3. Remove three screws to free the motor from its coupler bracket (Figure 4-21).

Note

To access the bottom screw you will have to lift up the rollback roller.

4. Remove the coupler vane from the bracket.
5. Reassembly is essentially the reverse of disassembly.

Caution

Take care not to damage wiring when you replace the Rollback Module in the machine. Make sure the barcode cable is routed properly after reassembly.

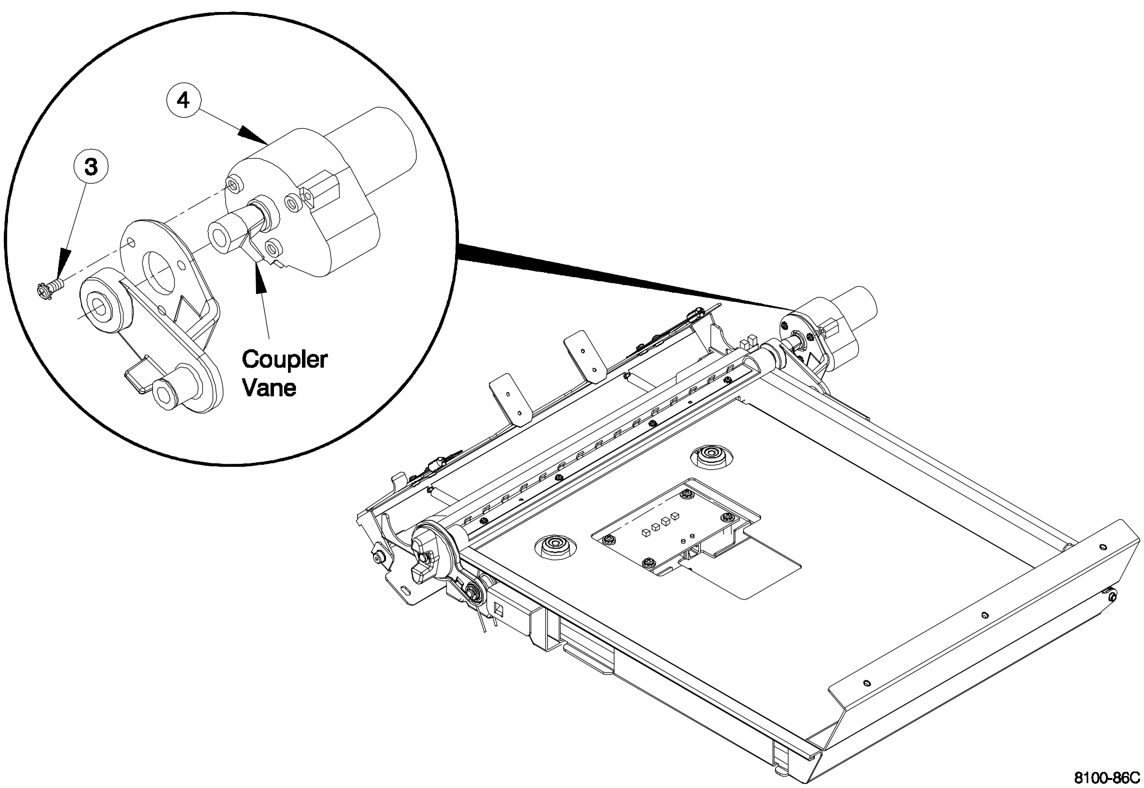


Figure 4-21. Removing the Rollback Motor

4-7-3. Cartridge Present Sensor (S1)

1. Remove the supply cartridge, power down, and remove the Rollback Module (4-7-1).

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Disconnect the electrical plug from the sensor (Figure 4-22).

Caution

If the same sensor is to be replaced, be careful not to damage the mounting clips during removal.

3. Gently rock the sensor back and forth to disengage the mounting clips.
4. When replacing a sensor, make sure that the mounting clips are securely seated in the sheet metal.
5. Reassembly is essentially the reverse of disassembly.

Caution

Take care not to damage wiring when you replace the Rollback Module in the machine. Make sure the barcode cable is routed properly after reassembly.

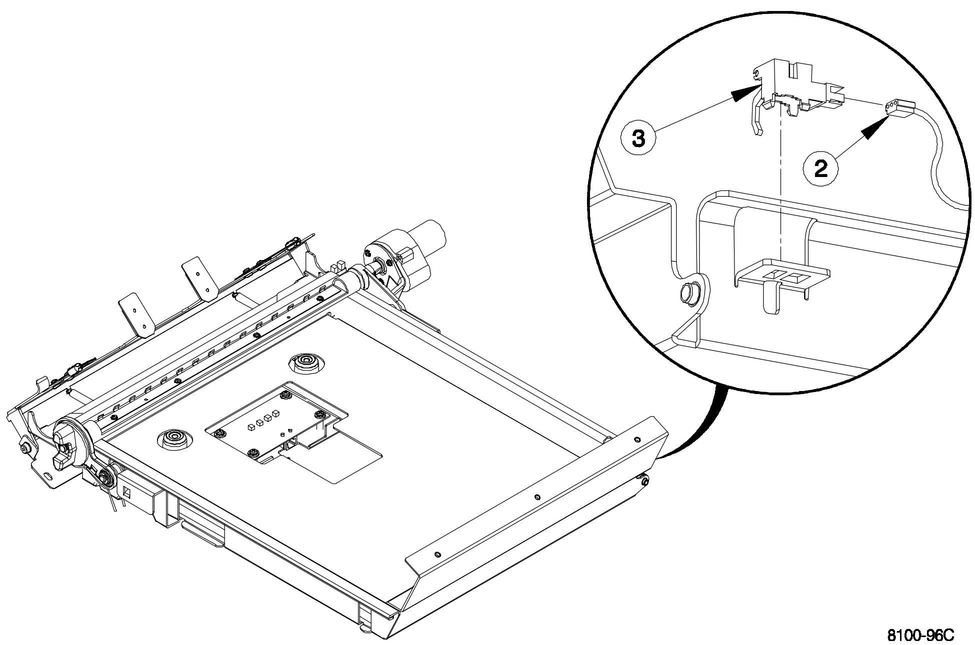


Figure 4-22. Removing the Cartridge Present Sensor

4-7-4. Rollback Home Sensor (S2)

1. Remove the supply cartridge, power down, and remove the Rollback Module (4-7-1).

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Disconnect the electrical plug from the sensor (Figure 4-23).

Caution

If the same sensor is to be replaced, be careful not to damage the mounting clips during removal.

3. Gently rock the sensor back and forth to disengage the mounting clips.
4. When replacing a sensor, make sure that the mounting clips are securely seated in the sheet metal.
5. Reassembly is essentially the reverse of disassembly.

Caution

Take care not to damage wiring when you replace the Rollback Module in the machine. Make sure the barcode cable is routed properly after reassembly.

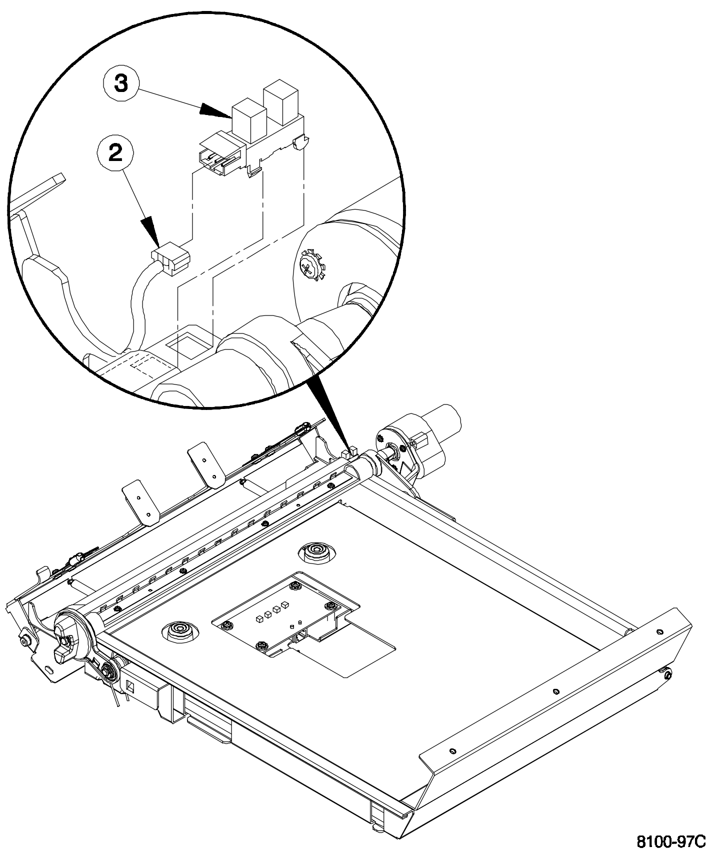


Figure 4-23. Removing the Rollback Home Sensor

4-7-5. Barcode Reader Board

Caution

To avoid damaging sensitive electronic components, always wear a static strap when handling circut boards. Any circuit board that is replaced in the **DryView** 8100 must be returned to Kodak for rework, or disposed of properly. Printed circuit boards contains lead.

1. Remove the supply cartridge.
2. Actuate the Service Switch by unscrewing the actuator bolt.
3. Open the front door. Then power off, then on, to lower the elevator.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

4. Power down and disconnect the power cord.
5. Turn the rollback knob as necessary so the Barcode Reader Board is accessible through the cutout in the chassis.
6. Remove four attaching screws and washers, and remove the Barcode Reader Board (Figure 4-24).
7. Reassembly is essentially the reverse of disassembly.

Caution

Take care not to damage wiring when you replace the Rollback Module in the machine. Make sure the barcode cable is routed properly after reassembly.

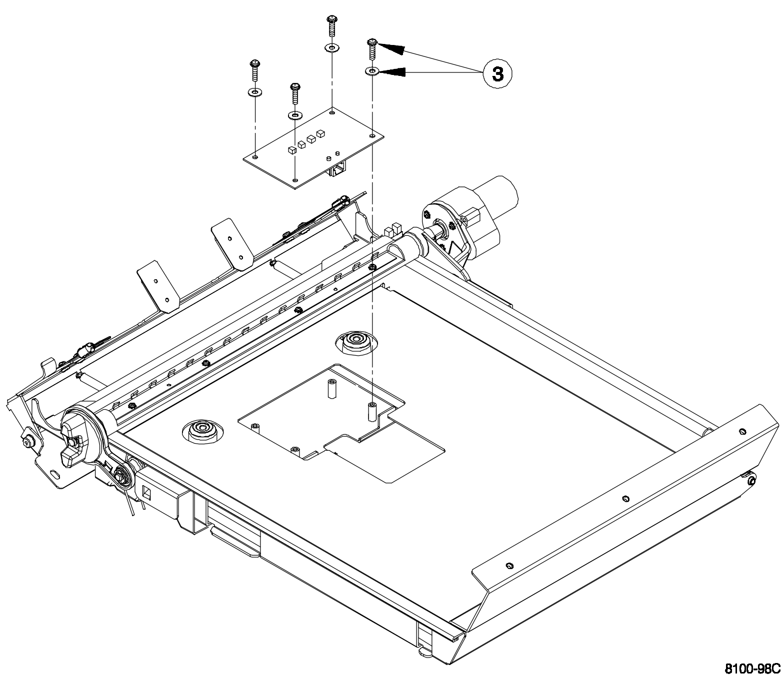


Figure 4-24. Removing the Barcode Reader Board

4-8. Elevator Asssembly

4-8-1. Elevator Module

Preliminary

1. Remove the supply cartridge.
2. Press the Power Switch OFF, but do not disconnect the power cord as yet.
3. Actuate the Service Switch by unscrewing the actuator screw.
4. Open the front door. Press the Power Switch ON while observing the elevator from the front of the machine. The elevator will begin moving to its down position.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

5. When the elevator is all the way down, press the Power Switch OFF and disconnect the power cord.

Disassembly

1. Disconnect the cable plug from the elevator chassis (Figure 4-25).
2. Disconnect the plug insert from the elevator home sensor, and pull the wires out through the side of the elevator chassis.
3. Remove two attaching screws.
4. Pull the pin and pivot the motor forward so the threaded elevator shaft clears the mounting base for the elevator. Then remove the Elevator Module from the machine.

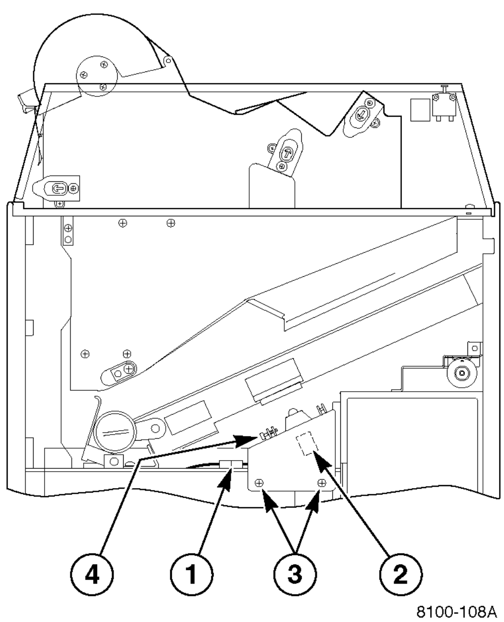


Figure 4-25. Removing the Elevator Module

4-8-2. Elevator Home Sensor (S12)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Open the front door.

Note

The sensor can be replaced without removing the Elevator Module from the machine. However, you can gain easier access to the sensor by removing the module (4-8-1).

4. Disconnect the electrical plug insert from the sensor connector (Figure 4-26).

Caution

If the same sensor is to be replaced, be careful not to damage the mounting clips during removal.

5. Gently rock the sensor back and forth to disengage the mounting clips.
6. When replacing a sensor, make sure that the sensor clips are properly seated in the sheet metal.

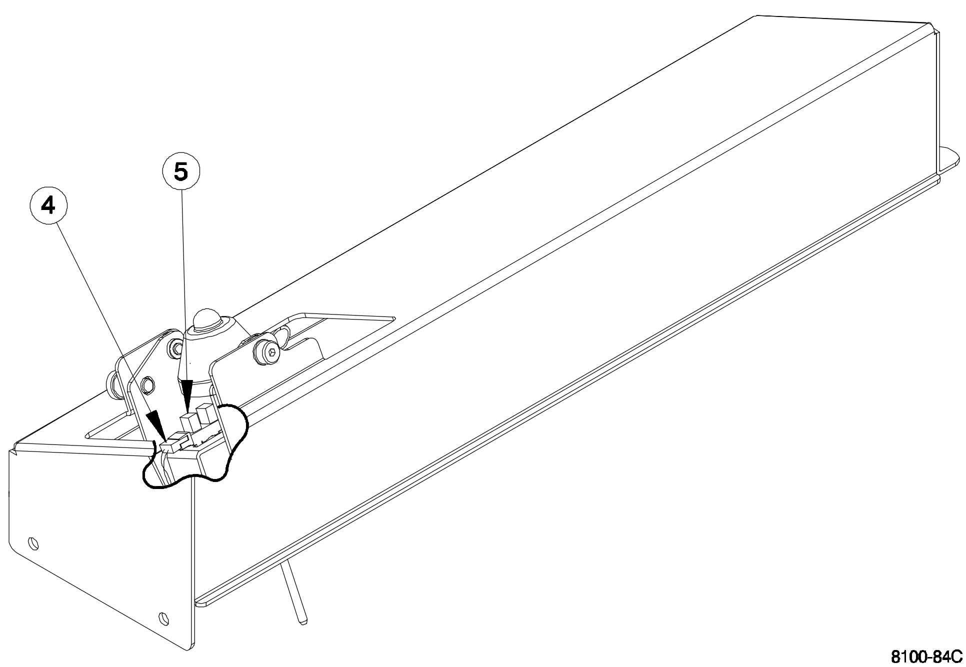


Figure 4-26. Removing the Elevator Home Sensor

4-8-3. Elevator Motor and Hub Assembly (Step 8)

1. Remove the supply cartridge, power down, and remove the Elevator Module (4-8-1).

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Disconnect the electirical plug from the elevator chassis (Figure 4-27).
3. Free the motor electrical wires from the mount.
4. Remove two screws to free the motor.

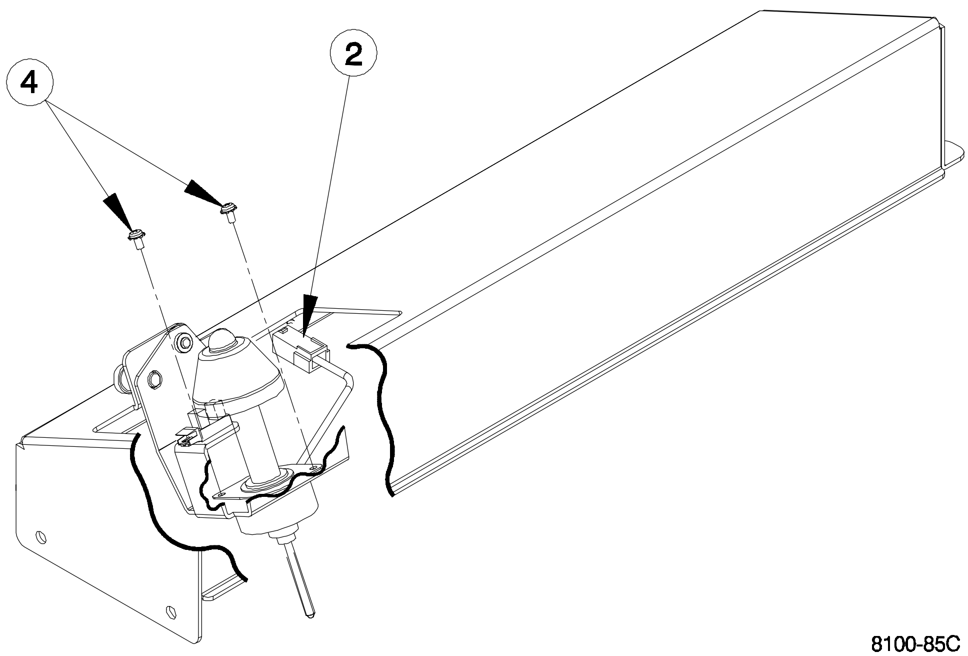


Figure 4-27. Removing the Elevator Motor and Hub Assembly

4-9. Feed Roller Assembly

4-9-1. Feed Roller Module

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Open the front door and remove the back panel of the machine.
4. Make sure that the film pickup module is in the up position (reference paragraph 4-6-1, step 7).
5. Remove two attaching screws from the front (Front View in Figure 4-28).
6. Disconnect three electrical cables (Rear View).
7. Remove two attaching screws from the back side (Rear View).
8. Carefully lift and remove the module from the machine.

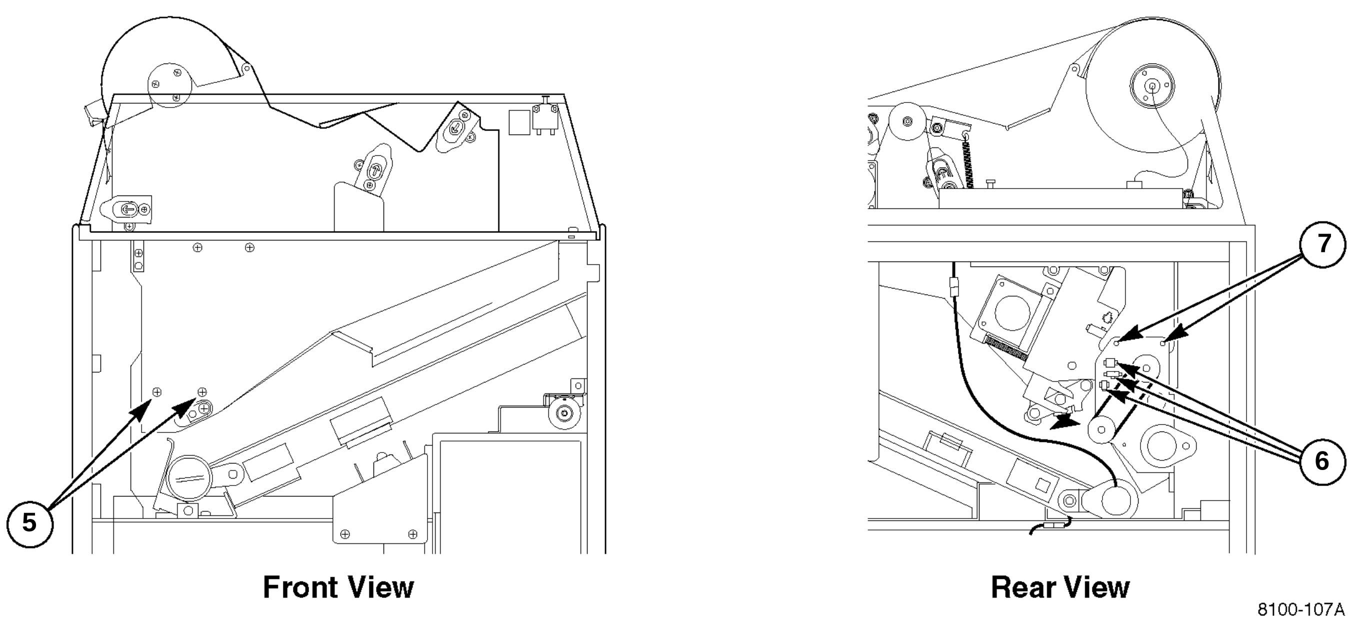


Figure 4-28. Removing the Feed Roller Module

4-9-2. Feed Roller Open Sensor (S11)

Special Tools

9-volt dry-cell battery

Preliminary

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Feed Roller Module (4-9-1) and the Feed Roller Open Motor (4-9-3).

Disassembly

1. Disconnect the electrical plug insert from the sensor connector.

Caution

If the same sensor is to be replaced, be careful not to damage the mounting clips during removal.

2. Gently rock the sensor back and forth to disengage the mounting clips (Figure 4-29).
3. When replacing a sensor, make sure that the sensor clips are properly seated in the sheet metal.

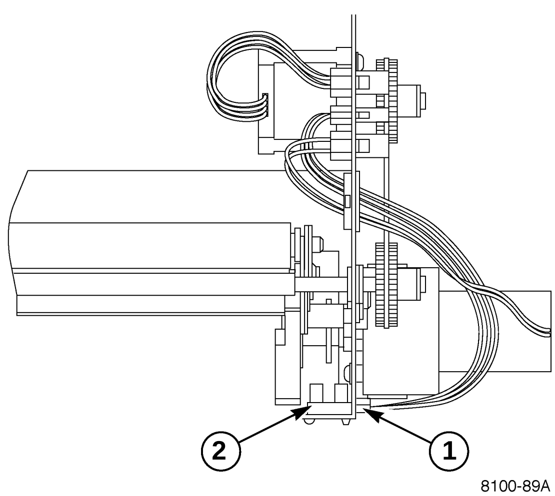


Figure 4-29. Removing the Feed Roller Open Sensor

4-9-3. Feed Roller Open Motor (DCM4)

Preliminary

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Feed Roller Module (4-9-1).

Disassembly

1. Move the vane out of the sensor as follows:
   a. Use a 9-volt dry-cell battery to operate the Film Feed Motor to drive the vane out of the sensor. (See Sensor Vane positions in Figure 4-30.)

Note

Insert a paper clip in each of the two pin sockets of the motor connector (Figure 4-30), and place the battery poles across the two clips to apply power to the motor.

   b. When the vane has moved out of the sensor, remove the battery and clips.
2. Loosen the setscrew that attaches the vane and cam to the motor shaft (Figure 4-30).
3. Pull the vane and cam from the shaft.
4. Remove the motor electrical connector from the chassis.
5. Remove three attaching screws and remove the motor.

Reassembly

1. Position the motor as shown in Figure 4-30 and attach it with the three screws.
2. Make sure that the flat on the motor shaft is positioned so that the Feed Roller Open Sensor will not interfere with installation of the cam and vane on the motor shaft.

Note

If you have to reposition the motor shaft, use a 9-volt battery to drive the motor as described in step 1 in **Disassembly** above.

3. Install the cam and vane on the motor shaft and secure it by tightening the setscrew against the flat of the shaft.
4. Install the motor electrical connector in the chassis, and replace the motor drive belt.

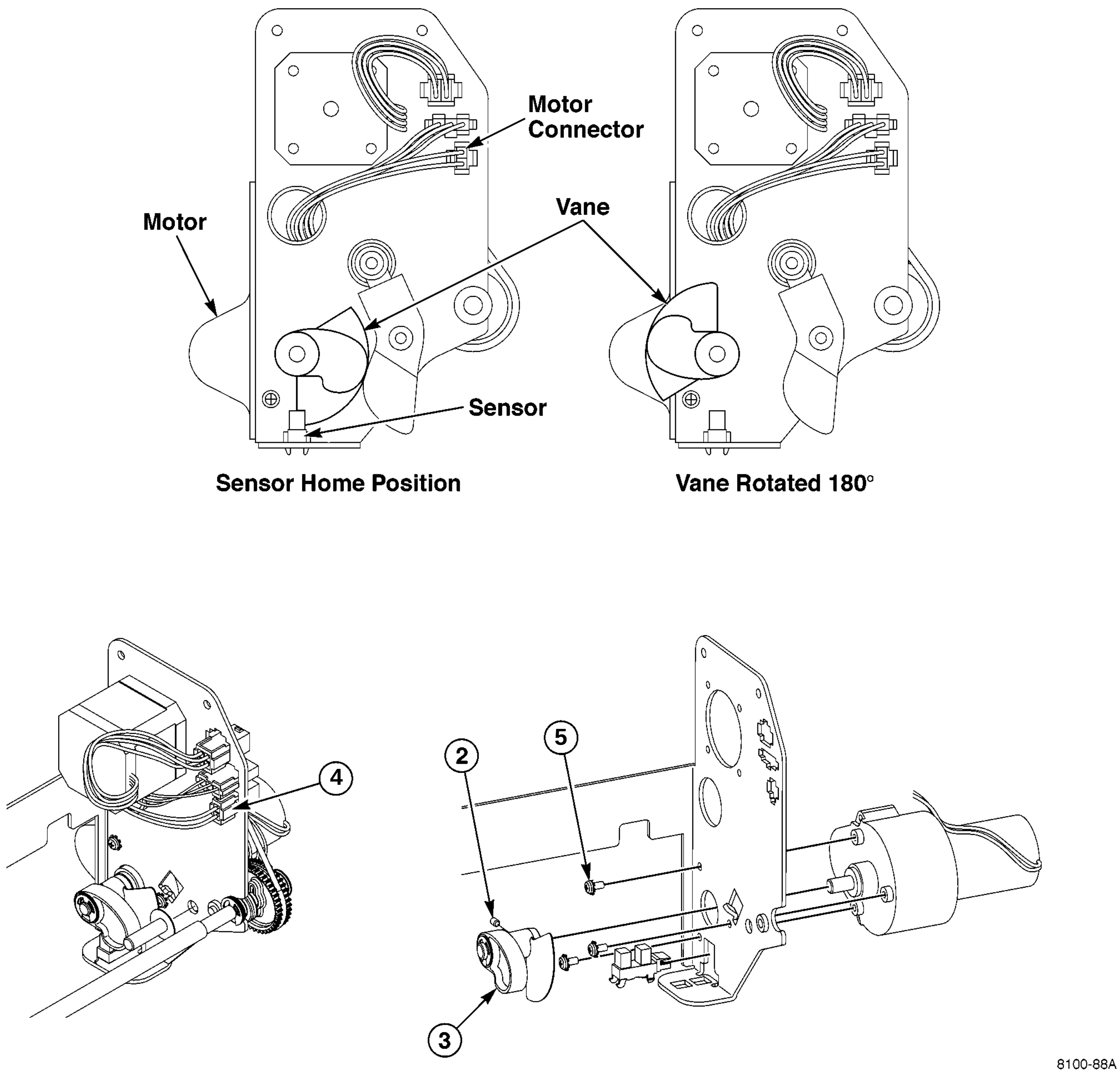


Figure 4-30. Replacing the Feed Roller Open Motor

4-9-4. Feed Roller Motor (Step 1) and Pulley

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Feed Roller Module (4-9-1).
4. Remove the electrical connector for the motor from the chassis (Figure 4-31).
5. Remove three of the motor attaching screws and rotate the motor down to loosen the drive belt.
6. Remove the drive belt.
7. Remove the E-ring, and remove the pulley and dowel pin.
8. Remove the remaining attaching screw and remove the motor.

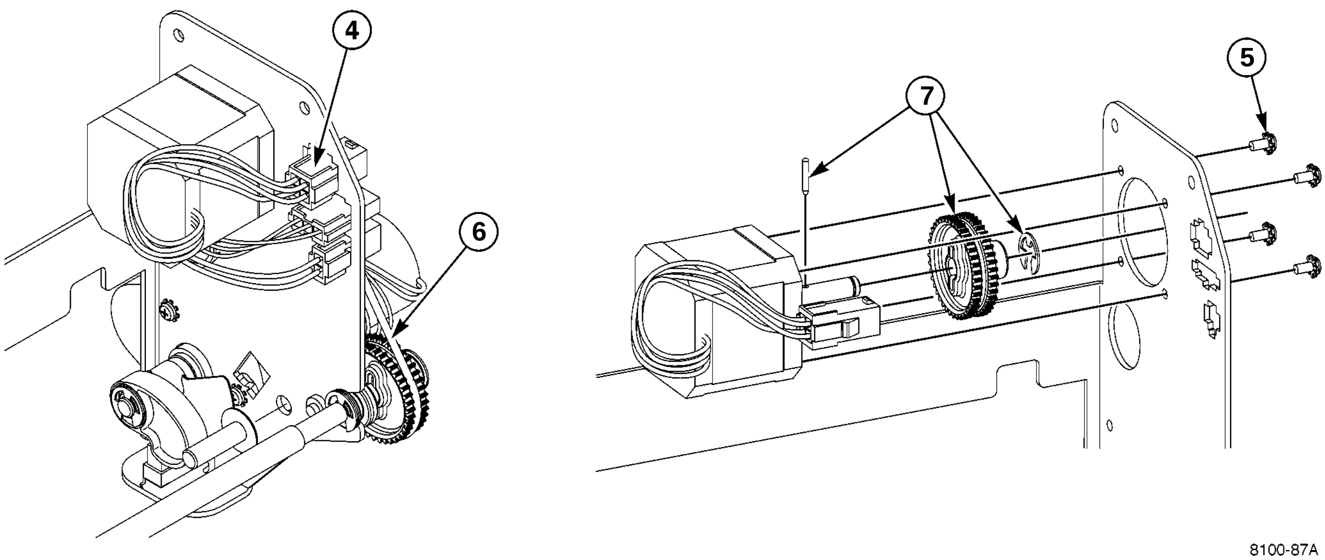


Figure 4-31. Removing the Feed Roller Motor

4-9-5. Feed Roller Torsion Springs

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Feed Roller Module (4-9-1).

Note

Be aware that the two torsion springs are not identical. For reference in reassembly, note the configuration of the springs as you remove them.

4. For each spring: Remove the end of the spring from the chassis retainer (Figure 4-32).
5. Remove two screws (M4) to free the idler roller assembly.
6. Slide the ends of the springs out of the plastic retainers.

Note

In reassembly, make sure the flanges of the pivots (Figure 4-32) for the torsions springs are seated flat against the feed roller bracket.

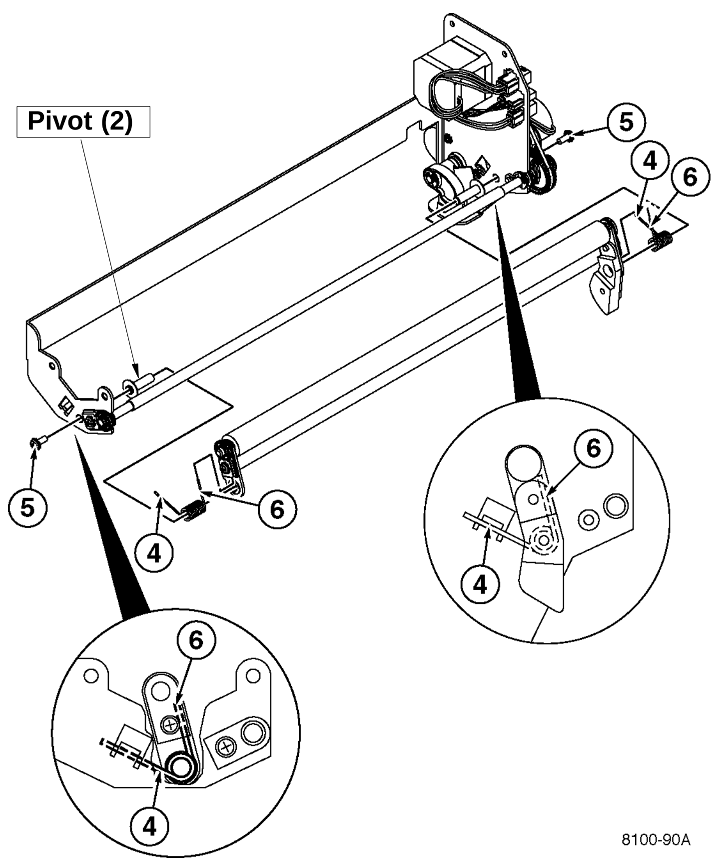


Figure 4-32. Removing the Feed Roller Torsion Springs

4-10. Vertical Transport Assembly

4-10-1. Vertical Transport Module

Disassembly

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Open the front door.
4. Remove the rear panel of the machine.
5. At the rear of the machine, remove two screws and loosen two screws (in slots in the chassis flange). (See the Rear View in Figure 4-33.)

Note

To more easily access the screws for removal, you can remove plug J2 from the Feeder Board.

6. Disconnect the electrical plug from the Vertical Transport Assembly (Rear View).
7. At the front of the machine, remove two attaching screws (Front View).

Caution

In removing and replacing the Vertical Transport Module, take care not to damage the actuator of Vertical Transport Sensor S8, which is mounted at the top of the module chassis.

8. To protect the actuator of Sensor S8 during disassembly and reassembly:
   a. Insert a piece of scrap film (approximately 10 by 12 inches in size) into the slot to the right of the Vertical Transport Module. Position it *below* the actuator of S8.
   b. Carefully slide the film up so it lifts and passes above the actuator of S8.
   c. Tape the film to the chassis at the right of the Vertical Transport Module, to hold it in place during removal and replacement of the module.
9. Carefully slide the module out the front of the machine.

Reassembly

1. Make sure the film for protecting the sensor actuator is still in place.
2. Carefully slide the Vertical Transport Module back into the machine, lifting the sensor actuator so it slides along the protective film.
3. After securing the module attaching screws and connecting the electrical plugs, remove the film.

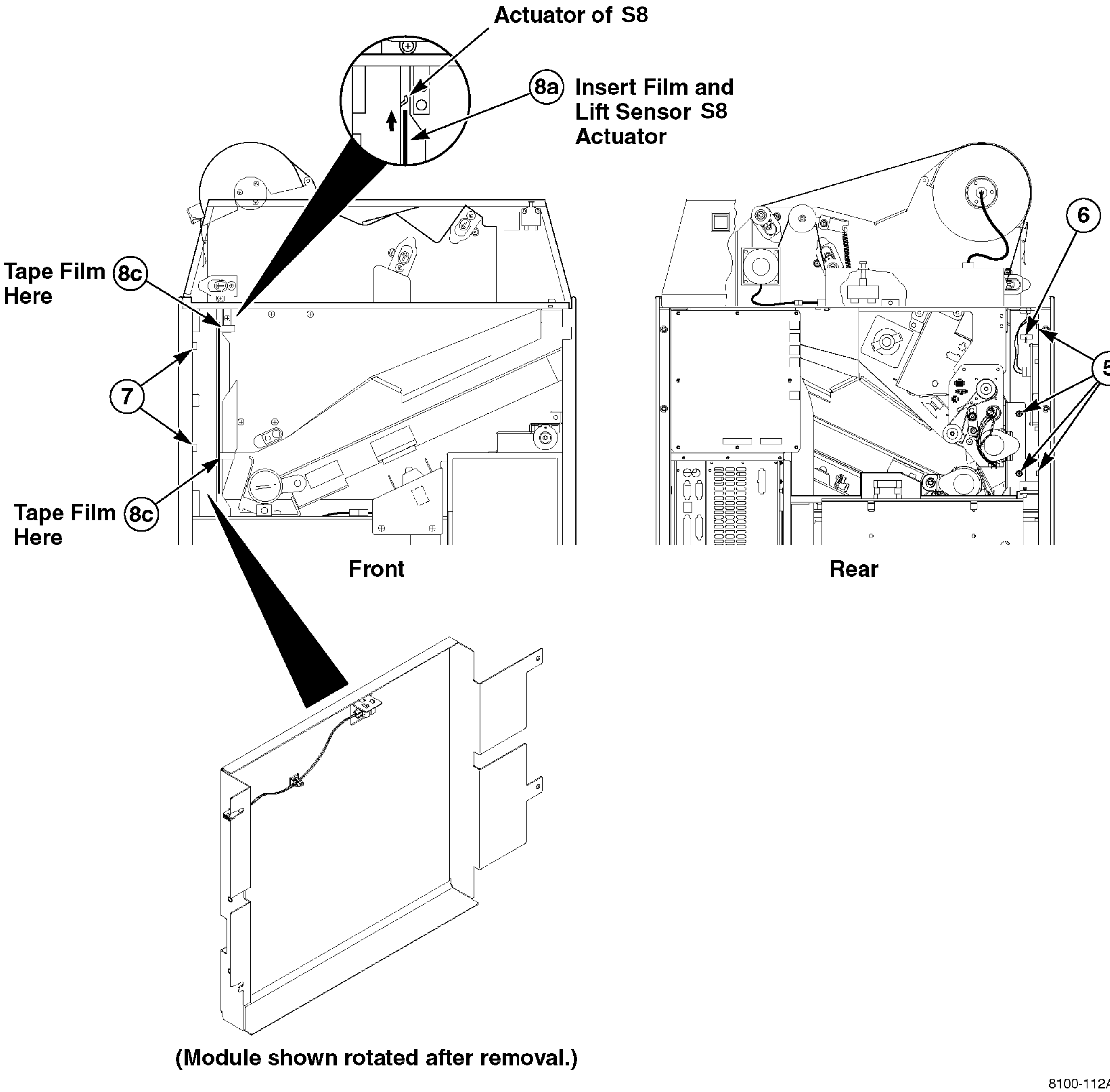


Figure 4-33. Removing the Vertical Transport Module

4-10-2. Vertical Transport Sensor (S8)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Vertical Transport Module (4-10-1).
4. Disconnect the electrical plug from the sensor (Figure 4-34).

Caution

If the same sensor is to be replaced, be careful not to damage the mounting clips during removal.

5. Gently rock the sensor back and forth to disengage the mounting clips.
6. When replacing a sensor, make sure that the sensor clips are properly seated in the sheet metal.

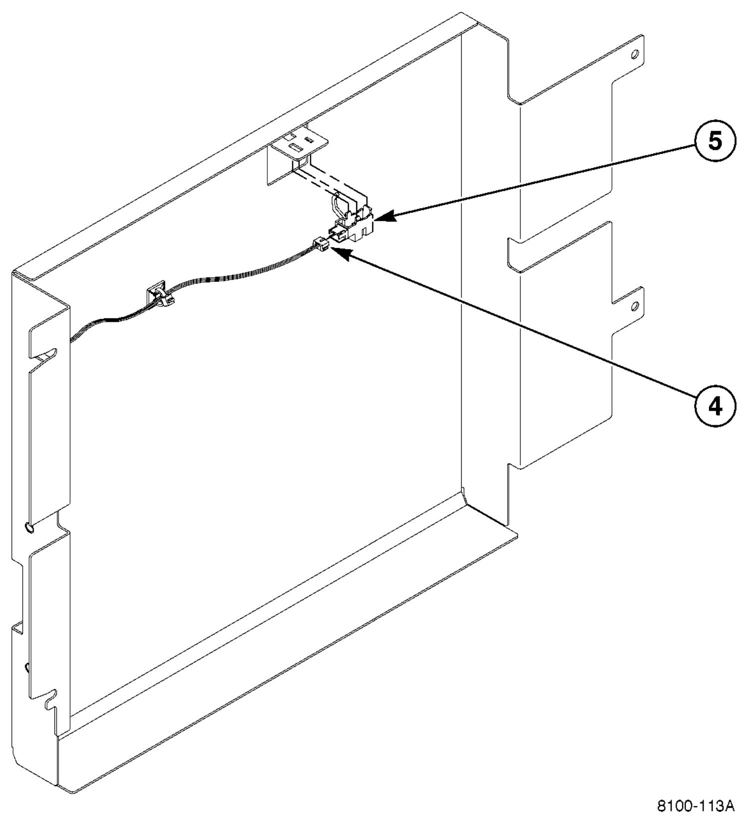


Figure 4-34. Removing the Vertical Transport Sensor

4-11. Imaging (Exposure) Assembly

4-11-1. Imaging Module

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Open the front door.
4. Remove the rear panel of the machine.
5. At the front of the machine, remove two attaching screws (Front View in Figure 4-35).
6. At the rear of the machine, remove two attaching screws (Rear View).
7. Slide the end of Imaging Module about 4 inches outside the rear of the machine as shown in Figure 4-35.
8. Loosen the two screws attaching the connector and disconnect the flat cable from the receptacle on the left side (Rear View).
9. Disconnect the four cable plugs from the right side (Rear View).
10. Carefully slide the Imaging Module most of the way out of the machine and lower the end to the floor while the other end remains in the machine.

Caution

The Imaging Module is heavy. It may require two persons to lift it.

11. Carefully lift the Imaging Module and set it on a flat working surface.

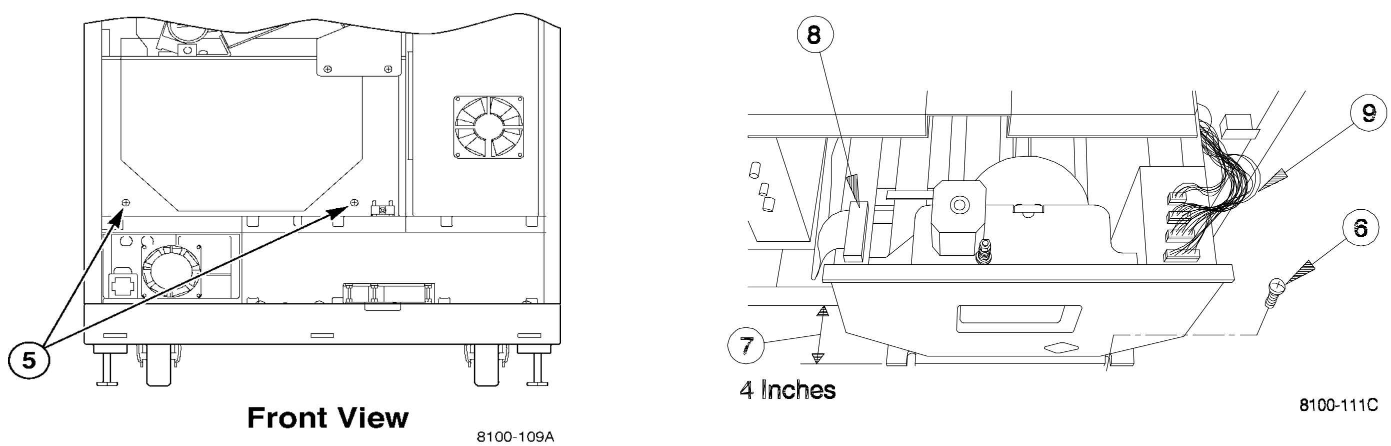


Figure 4-35. Removing the Imaging Module

4-11-2. Scanner Assembly

Disassembly

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Imaging Module from the machine (4-11-1).
4. Unplug the flat cable from the scanner.
5. Loosen both attaching screws from the flat cable clamp closest to the looped end of the flat cable. Then remove the clamp to free the looped end of the cable (Figure 4-36).
6. Disconnect the electrical plug from the optics home sensor.
7. Unclip and push down the electrical connector for the translation motor, to free it from the platen connector plate.
8. Remove the two scanner assembly attaching screws from the end of the Imaging Module.
9. Loosen the two attaching screws and remove the two blocks securing the other end of the scanner assembly.
10. With the scanner slid back to the approximate position shown in Figure 4-36, carefully lift the scanner assembly from the platen assembly and place it on a work bench.

Reassembly

Reassembly is essentially the reverse of disassembly.

1. Observe the following precaution:

Caution

The flat cable must be clamped and positioned straight as shown in Figure 4-36. Clamp positions are marked on the cable. The looped end must have a 180-degree twist where it plugs into the scanner, as shown in the illustration.

2. After the cable is positioned, manually run the scanner assembly all the way forward and then all the way back to make sure there is enough slack in the cable.
3. After reassembly, perform the following adjustments:
   - Optics translation speed and SOP delay adjustment (paragraph 3-4).
   - Laser dynamic range adjustment (paragraph 3-6).

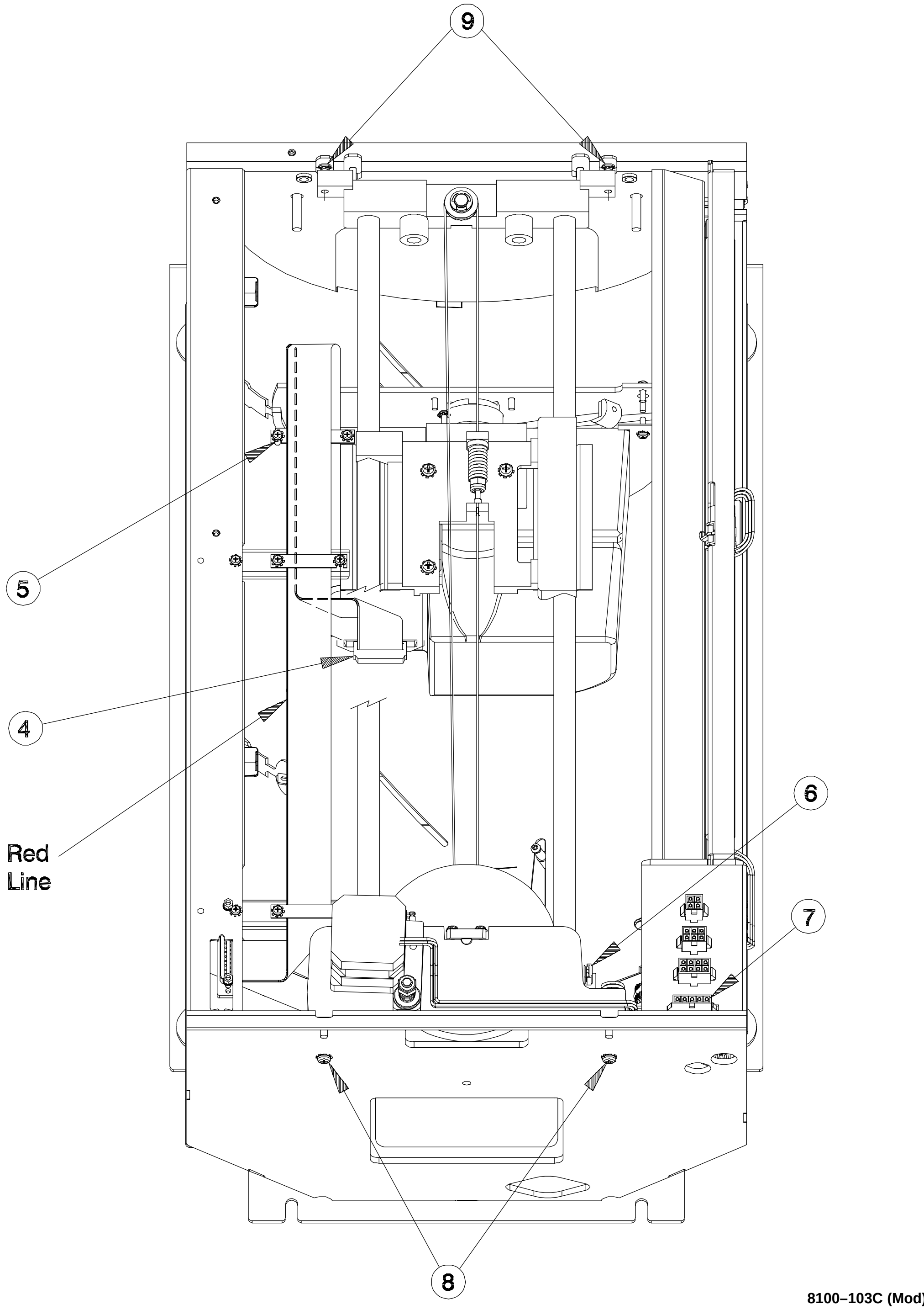


Figure 4-36. Removing the Scanner Assembly

4-11-3. Platen Film Sensor (S6)

Disassembly

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Imaging Module from the machine (4-11-1).
4. Disconnect the electrical plug from the sensor (Figure 4-37).

Caution

If the same sensor is to be replaced, be careful not to damage the mounting clips during removal.

5. Gently rock the sensor back and forth to disengage the mounting clips.

Reassembly

6. When replacing a sensor, make sure that the mounting clips are securely seated in the sheet metal.
7. Make sure that the sensor actuator arm operates freely in its slot.

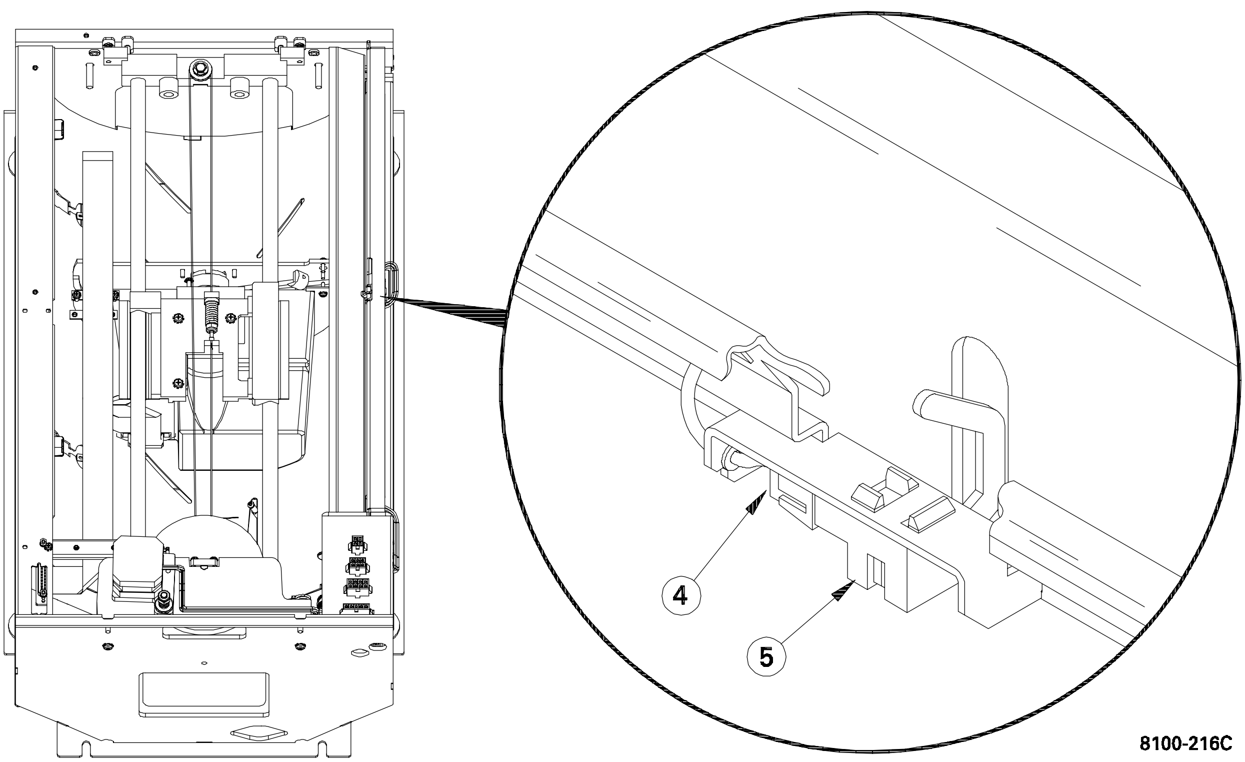


Figure 4-37. Replacing the Platen Film Sensor (S4)

4-11-4. Optics Home Sensor (S7)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Imaging Module from the machine (4-11-1).
4. Remove the electrical plug from the optics home sensor (see Figure 4-38).
5. Remove the attaching screw and remove the sensor.
6. After reassembly, perform the optics translation speed and SOP adjustment, paragraph 3-4.

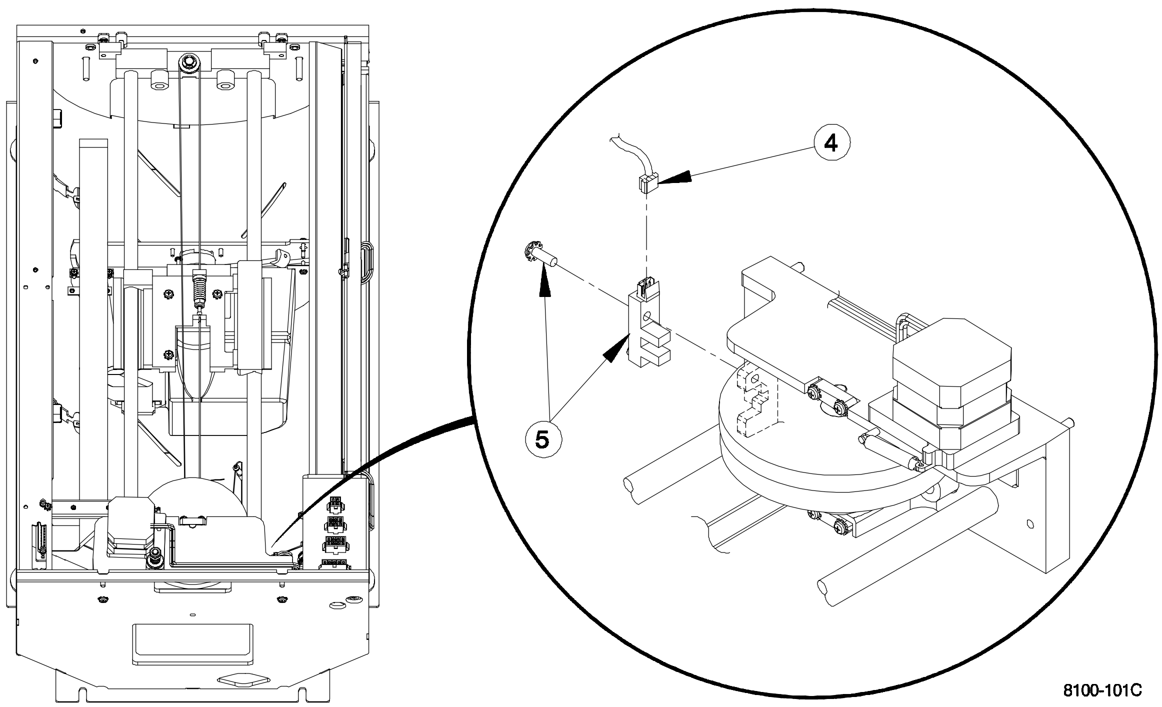


Figure 4-38. Replacing the Optics Home Sensor (S7)

4-11-5. Optics Translation Motor (Step 4) and Capstan

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Perform steps 3 through 7 of paragraph 4-11-1 to expose the Optics Translation Motor. (It is not necessary to completely remove the Imaging Module from the machine.)
4. Remove the motor connector from the chassis (Figure 4-39).
5. Remove one nut (M6) and compression spring.

Note

Remove cable ties as necessary.

6. Remove the motor and capstan along with the bracket assembly.

Note

During reassembly, after installing the nut (M6) and compression spring, tighten the nut so it is flush with the end of the bolt.

7. After reassembly, perform the optics translation speed and SOP delay adjustment (paragraph 3-4).

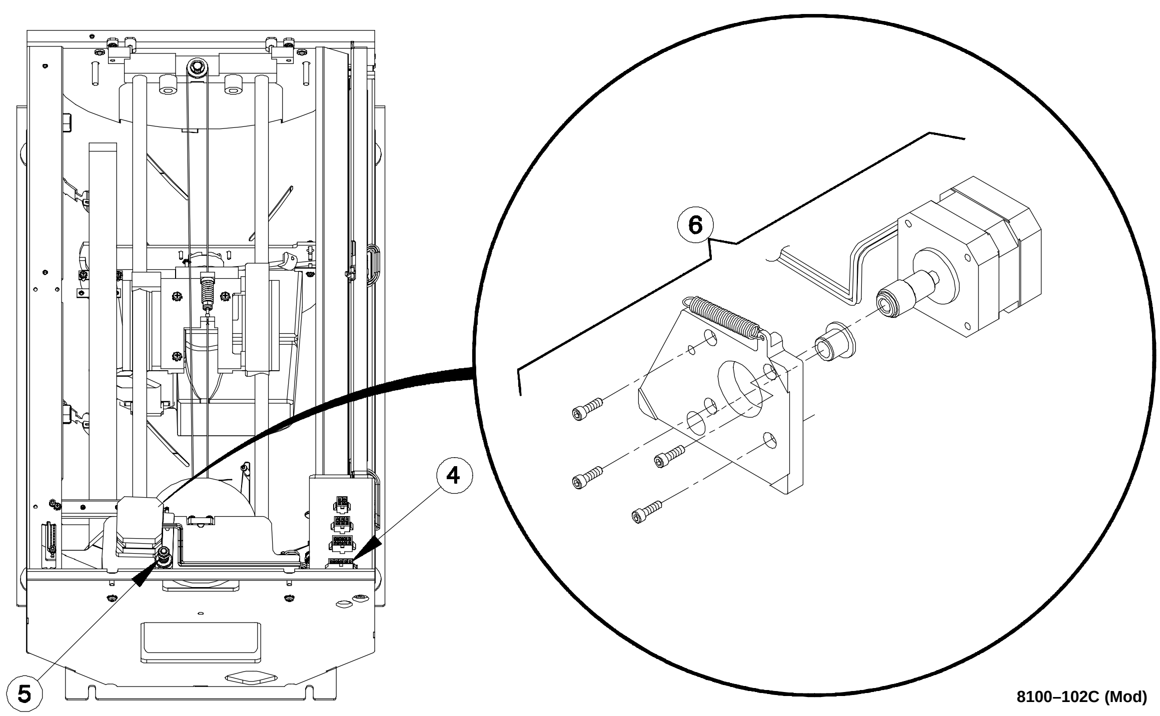


Figure 4-39. Removing the Optics Translation Motor and Capstan

4-11-6. Film Centering Motor (Step 7)

Disassembly

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

1. Remove the supply cartridge. Then remove power and disconnect the power cord.
2. Remove the Imaging Module from the machine (4-11-1).
3. Disconnect the motor electrical connector from the chassis (Figure 4-40).
4. Loosen the screw (2 mm hex head) that secures the film centering arm to the motor shaft, and move the centering arm about 1 inch toward the center of the platen. Then snug up the screw.
5. Remove the two motor attaching screws through the access hole in the front of the Imaging Module.
6. Pull out the motor and shaft (with attached centering arm and screw) through the access hole. (You will have to partially rotate the motor to get the centering arm out.)

Reassembly

1. Position the centering arm on about the center of the shaft, and snug up the attaching screw.
2. Insert the motor and shaft (with centering arm) through the access hole in the end of the platen assembly.
3. Position the centering arm in the slot in the bottom of the platen and insert the end of the shaft into the bearing under the platen.
4. Secure the motor with two attaching screws, and install the motor electrical connector in its chassis slot.
5. Loosen the centering arm screw. Position the arm so the screw is centered on the first reference line (the line closest to the motor) on the platen bottom (see Figure 4-40). Then tighten the screw.
6. Perform the optics translation speed and SOP delay adjustment (paragraph 3-4).

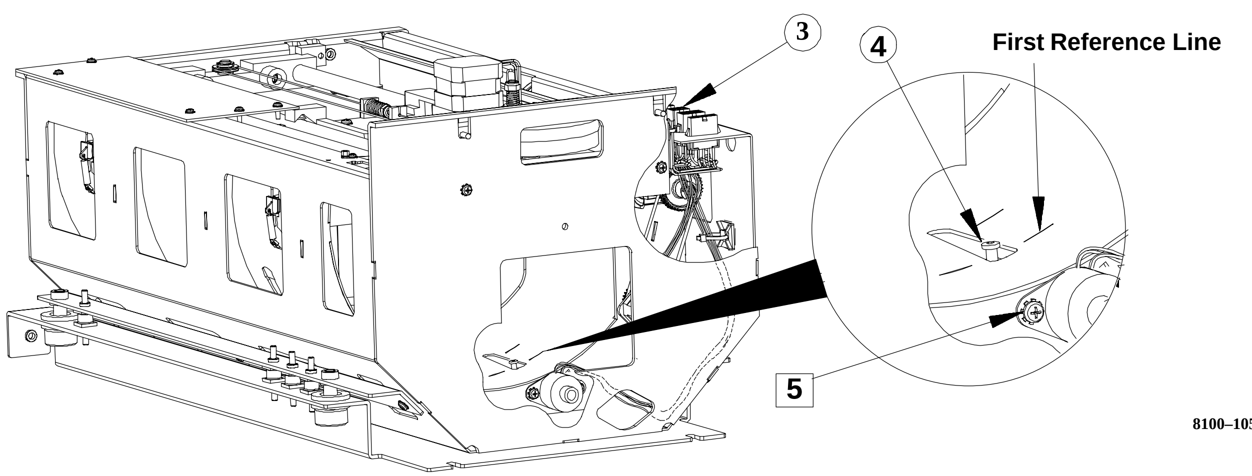


Figure 4-40. Replacing the Film Centering Motor

4-11-7. Platen Roller Motor (Step 2)

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Imaging Module from the machine (4-11-1).
4. Disconnect the motor electrical connector from its slot in the chassis.
5. Remove the three screws attaching the motor.
6. Remove the belt.
7. Remove the motor.

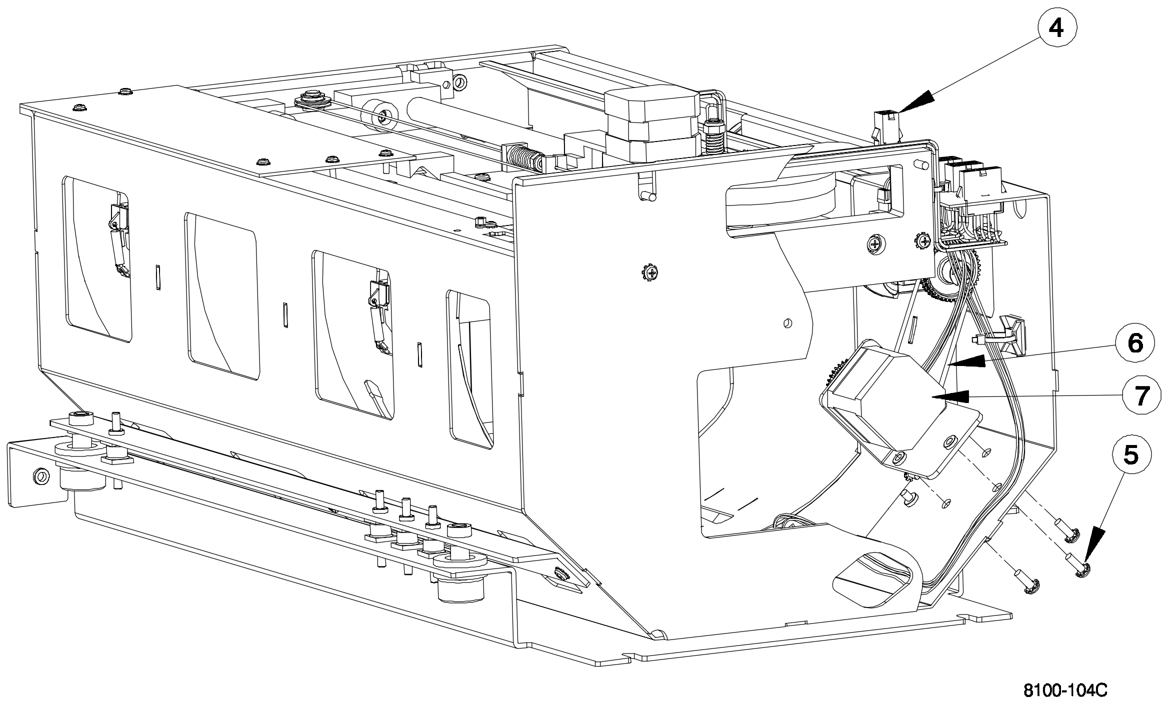


Figure 4-41. Removing the Platen Roller Motor

4-11-8. Platen Nip Roller Belt

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Imaging Module from the machine (4-11-1).
4. Loosen the three attaching screws for the platen roller motor.
5. Remove the belt.

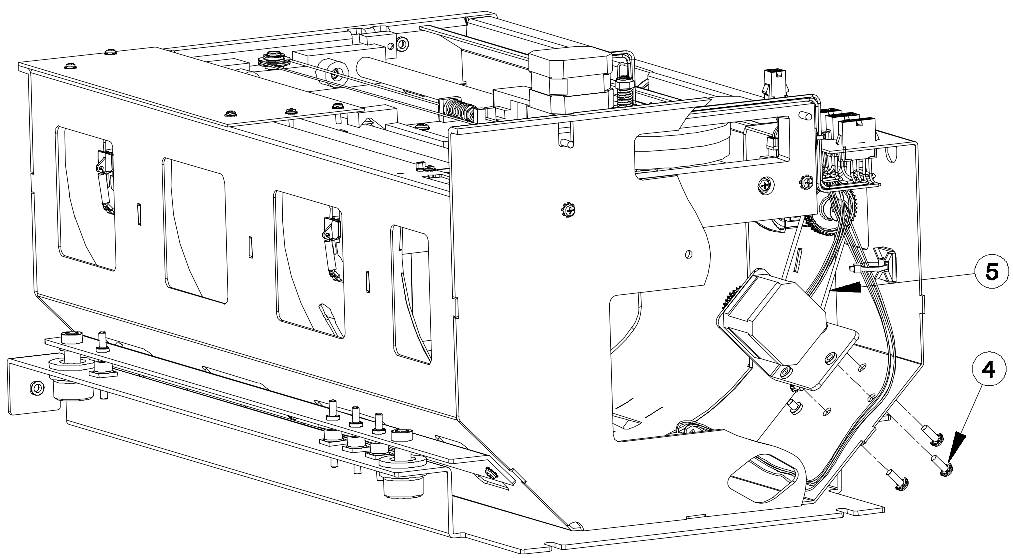


Figure 4-42. Removing the Platen Nip Roller Belt

4-11-9. Platen Nip and Drive Rollers

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Imaging Module from the machine (4-11-1).
4. Remove the nip roller belt (paragraph 4-11-8).
5. Remove two attaching screws from each bearing block (see Figure 4-43).
6. Remove the outside bearing block from the platen chassis, and slide the nip roller assembly out the end of the platen assembly.
7. Remove the drive roller (with bearing block and sprocket) from the platen assembly.
8. Remove the E-ring and pull the sprocket from the drive roller.

Caution

In reassembly make sure that the notched surfaces of the bearing blocks (see inset in Figure 4-43) are pushed in all the way against the imaging cylinder. The roller set must be pushed in as close to the optics module as possible.

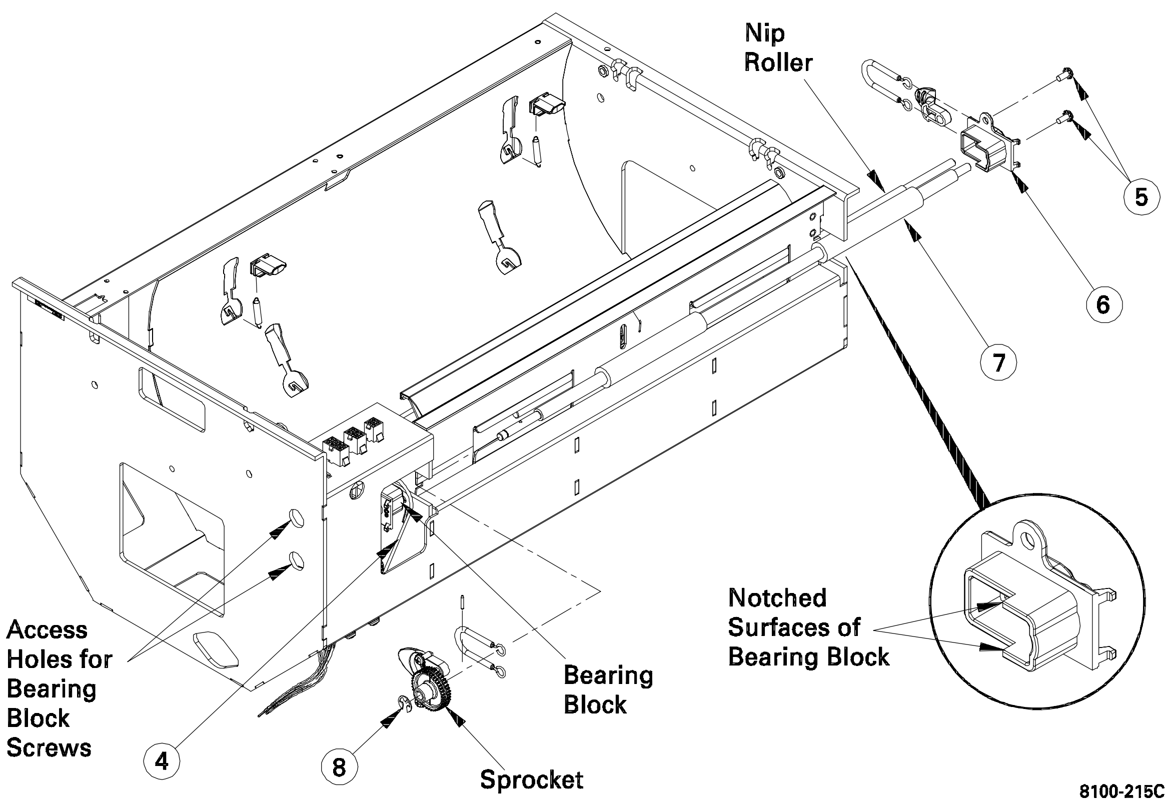


Figure 4-43. Removing the Platen Rollers

4-11-10. Vibration Mounts

Preliminary

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the Imaging Module from the machine (4-11-1).

Disassembly

1. Remove the six hex nuts (8-32) securing the vibration mounts to the platen support assembly (see Figure 4-44).
2. Remove the four platen shoulder screw (M6) from the corners of the platen support assembly, and remove the platen support assembly from the platen assembly.
3. Unscrew the six vibration mounts from the isolator brackets attached to the platen chassis.

Reassembly

1. Screw the six replacement vibration mounts into the isolator brackets. Tighten them so they are snug.
2. Install the platen support assembly on the vibration mounts.
3. Secure the platen support assembly to the vibration mounts with the six hex nuts.
4. Install the four shoulder screws.

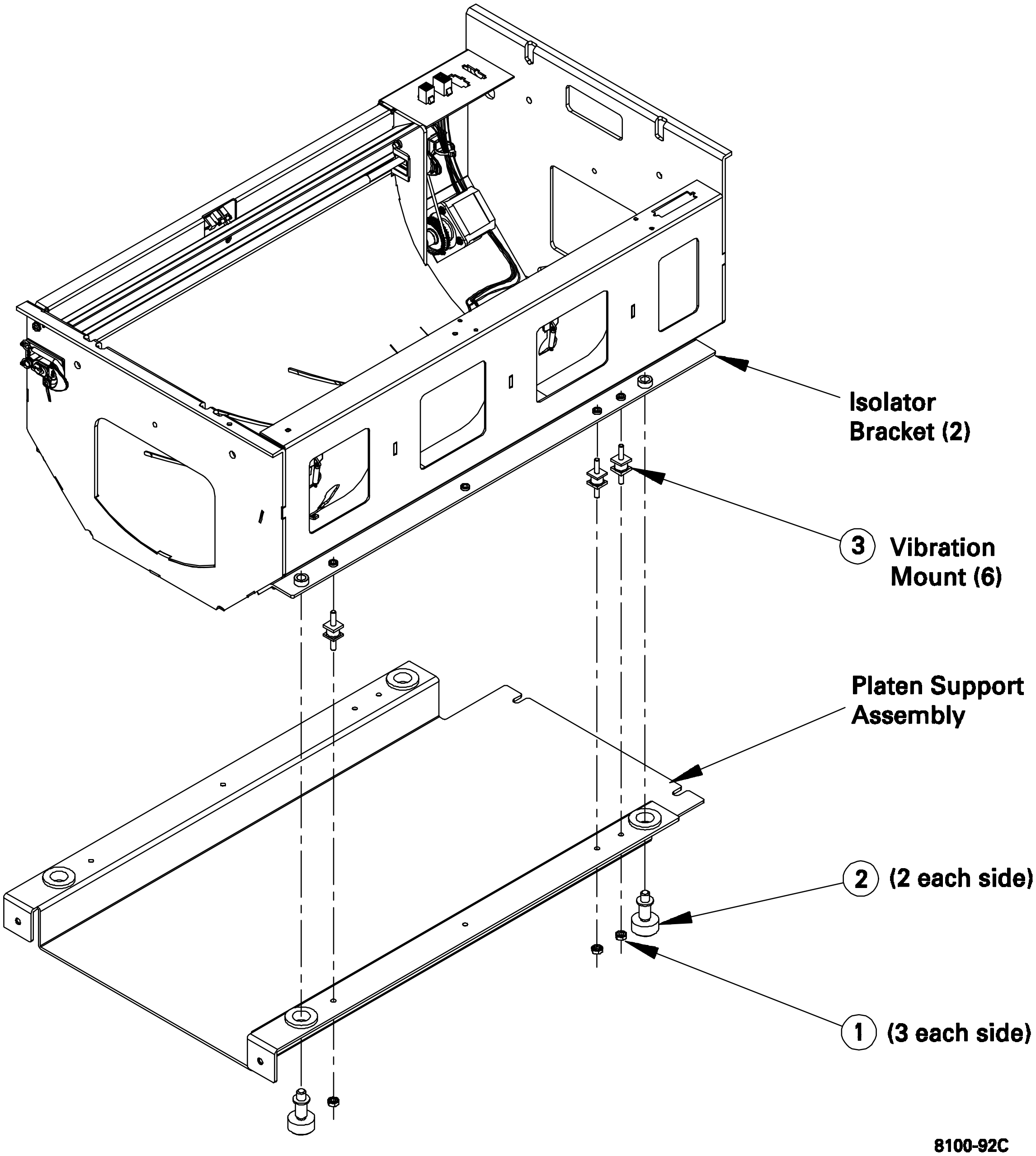


Figure 4-44. Replacing the Vibration Mounts

4-12. Power Assembly

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the machine rear panel.
4. Remove the two attaching screws from the power supply base (Figure 4-45). Also, open the front door and remove two attaching screws from the other end of the power supply.
5. Pull the power supply out the rear of the machine far enough to expose the cable connections at the center of the assembly.
6. Disconnect the ac power cable (Figure 4-45).
7. Disconnect the two dc cable connectors from the power supply board.
8. Carefully pull the power supply from the machine.

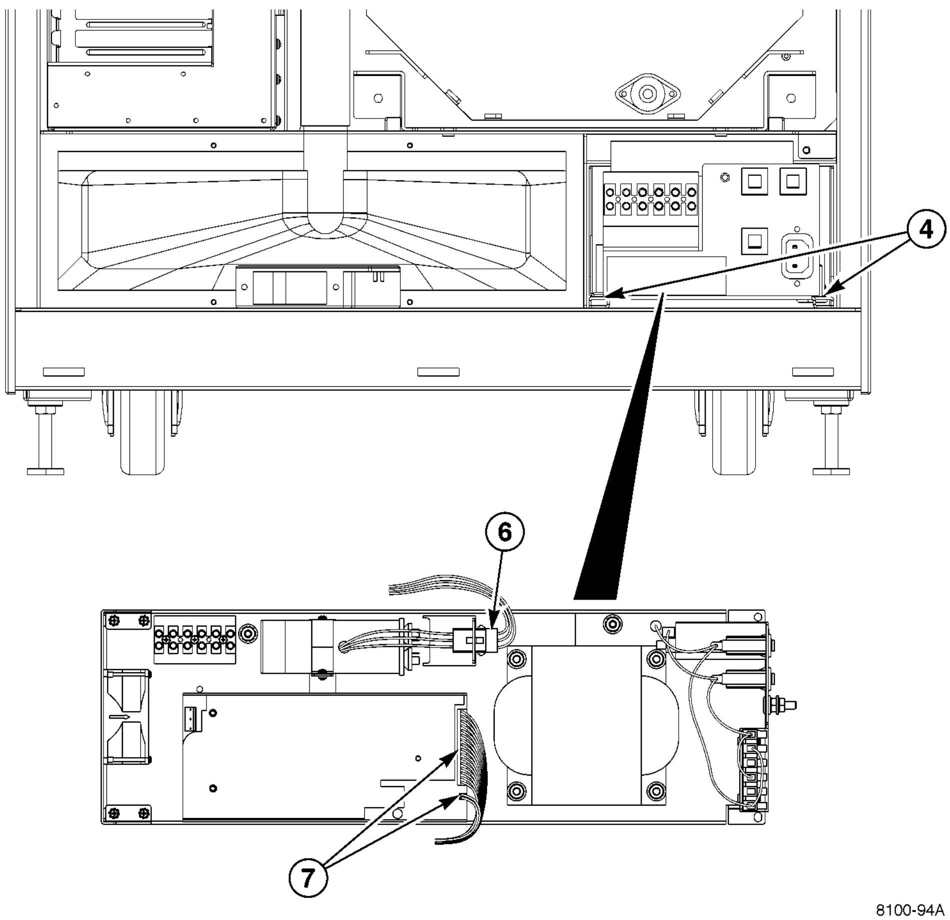


Figure 4-45. Removing the Power Assembly

4-13. MCS Electronic Components (Interlocks, Circuit Boards, Svc. Override Switch, etc.)

This paragraph provides disassembly instructions for miscellaneous electronic components.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling circuit boards. Printed circuit boards contain lead. Therefore replaced boards must be returned to Kodak for rework, or disposed of properly.

Preliminary

Perform this preliminary procedure before performing any disassembly procedure described below.

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.

Power Switch (Figure 4-46, Front View)

1. Lift the top hood.
2. Loosen two 7 mm nuts attaching the cover for the top hood interlock and power switch.
3. Slip down the cover (slotted) to expose the power switch.
4. Disconnect the wires and remove the power switch.

Top Hood Interlock (see Figure 4-46, Front View)

1. Lift the top hood.
2. Loosen two 7 mm nuts attaching the cover for the top hood interlock and power switch.
3. Slip down the cover (slotted) to expose the interlock.
4. Remove two attaching screws and disconnect the wires to free the interlock.

Front Door Interlock Switch (Figure 4-46, Front View)

1. Open the front door and remove the machine rear panel.
2. Loosen the four screws (two each end) securing the Imaging Module, and slide the module out the rear of the machine about 6 inches.
3. Open the platen door from the front of the machine.
4. Reach in through the platen doorway to remove two screws securing the interlock switch. Then disconnect the electrical plug to remove the switch. (Do not remove the whole interlock assembly.)

Door Release Solenoid (Figure 4-46, Front View)

1. Open the front door.
2. Remove four screws and disconnect the electrical plug to remove the solenoid.

Rear Panel Interlock (Figure 4-46, Rear View)

1. Remove the rear panel.
2. Remove the cover box for the Processor Interface Board (one plug and four screws).
3. Remove four screws and disconnect the wires to free the interlock.

MCS Board (Figure 4-46, Rear View)

1. Remove the rear panel and disconnect all electrical plugs from the board.
2. Remove eight attaching screws and remove the board.
3. After installing a new board, perform the processor drum temperature adjustment (paragraph 3-1) and the laser dynamic range adjustment (paragraph 3-6).

Feeder Board (Figure 4-46, Rear View)

1. Remove the rear panel and disconnect all electrical plugs from the board..
2. Remove four attaching screws and remove the board.

Service (Override) Switch (Figure 4-46, Rear View)

1. Remove the rear panel.
2. Remove the switch actuator screw from the Processor Interface Board (PIB) cover box. Then remove the PIB cover box (one plug and four screws).
3. Squeeze together the clips on the base of the switch to disconnect it from its mounting bracket.
4. Remove the wires from the switch terminals to free the switch.
5. Replace the switch and reconnect the wires.
6. Replace and secure the PIB cover box (four screws and one electrical plug).
7. With power applied, lift the upper hood and observe that the processor motor is operating. (Service Override Switch is in “service” position, defeating the Top Hood Interlock.)
8. Insert the actuator screw in the cover box and lower it to the “user” position. (The processor motor should stop turning.)

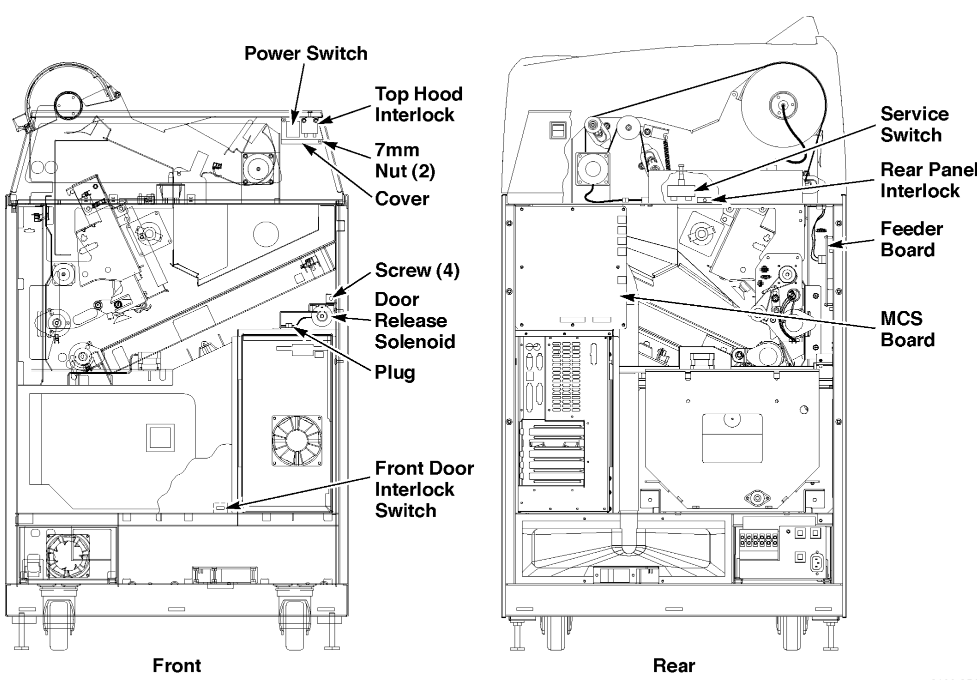


Figure 4-46. Replacing Miscellaneous Electronic Components

4-14. Image Management System (IMS)

Caution

The IMS includes a lithium battery. This type of battery requires proper disposal, and cannot be discarded with ordinary trash. The IMS is a controlled part and therefore if it is replaced it must be returned to Kodak for rework. Also, any printed circuit board that is replaced (the Serial Interface Board, for example) must be returned to Kodak or disposed of properly, since circuit boards contain lead.

Note

If you are going to replace the IMS with a new (preprogrammed) IMS, you will have to download the configuration files from the hard drive before removing the old IMS. (This is because a new hard drive will be installed with the IMS, and will require files from the old drive that are unique to this site.) See “Downloading the Configuration Files” in paragraph 4-14-1 before performing disassembly.

Disassembly

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Open the front door.
4. Remove the machine rear panel.
5. Disconnect the cable from the analog or digital modality.
6. Remove three screws and remove the back panel from the IMS.
7. Remove the following cables:
   - POWER cable from the MCS
   - COM 2 (MPC) cable
   - COM 1 (MODEM) cable
   - Cable to the SIB (TO SIB)
   - Signal cable to the MCS (TO MCS)
8. Loosen two attaching screws (in slots) at the rear of the IMS (Figure 4-47), and remove two attaching screws from the front.
9. From the rear of the 8100, carefully slide the IMS part way out the front of the machine. Then move to the front of the machine and pull the IMS all the way out of the machine.

Reassembly

1. Reassemble in reverse order of disassembly.

Caution

It is important that the two attaching screws be installed and secured both at the front and rear of the IMS after it is reinstalled in the 8100. If the screws are not reinstalled, front door operation will be affected.

2. If you are installing a new IMS: After installation, power up and restore the configuration files as instructed in procedure 7-9-11.

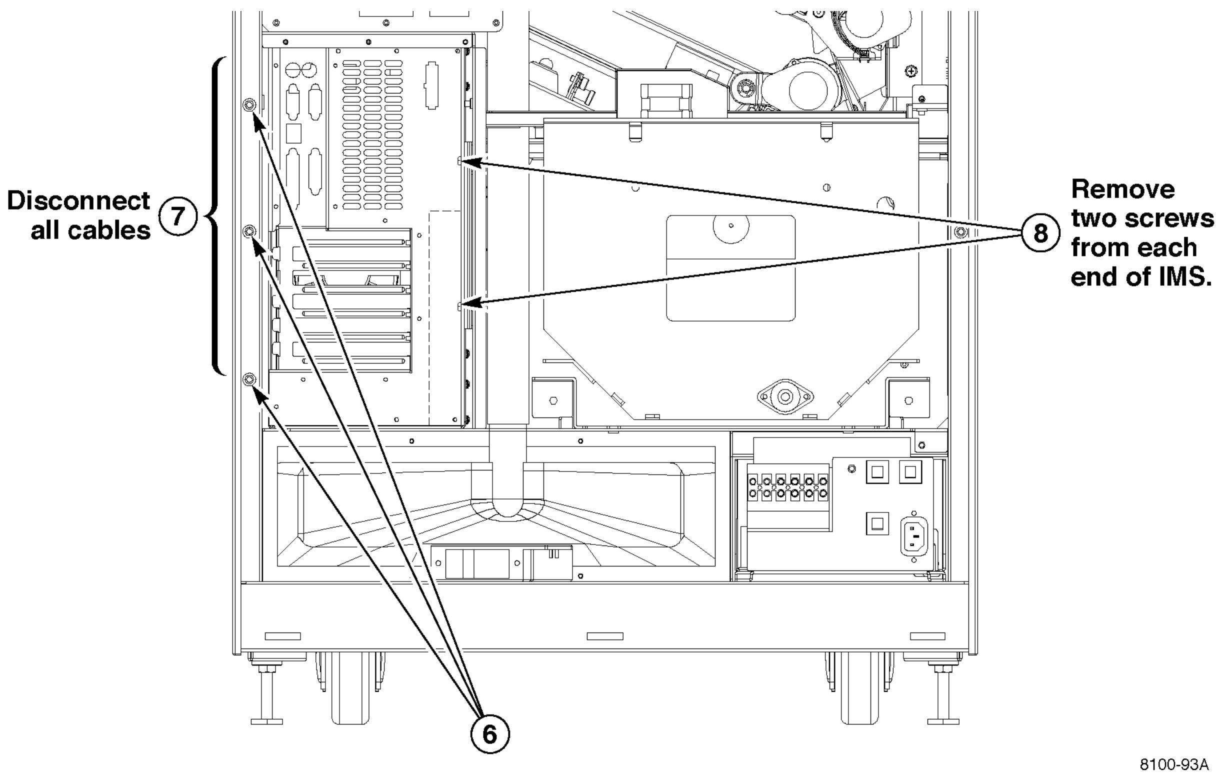


Figure 4-47. Removing the IMS Assembly

4-14-1. IMS Hard Drive

Following is the procedure for replacing a defective hard drive with a pre-loaded hard drive.

Downloading the Configuration Files

Before shutting down the 8100 for disassembly, back up the configuration files from the hard drive to a floppy diskette or a folder in your PC, if it is possible to access the defective hard drive. (See procedure 7-9-10.)

Disassembly

1. Remove the supply cartridge.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the **DryView** 8100. These voltages can cause severe injury or death.

2. Remove power and disconnect the power cord.
3. Remove the IMS from the machine (4-14).
4. Remove 17 attaching screws and remove the IMS cover.
5. Disconnect the power cable and the data cable from the hard drive (Figure 4-48).
6. Remove two attaching screws from each side and remove the hard drive from the IMS chassis.

Replacement

Install the new pre-programmed hard drive in reverse order of the disassembly procedure. (Do not apply power as yet.)

Checking the IMS Software Level on the New Hard Drive

1. Connect your Service PC to the 8100 via the network (see procedure 7-9-3) and apply power to the 8100.
2. Use MPC to check the version of IMS software in the new hard drive (under **Machine Information** in MPC).
3. Compare the version level to that of the IMS software on CDROM.
4. If the IMS software in the hard drive is not up to date, perform the following IMS software upload.

Uploading New IMS Software (if Necessary)

Use the 8100 FTP tool to load the latest version IMS software on the hard drive(see procedure 7-9-13).

Restoring the Configuration Files

Restore the most recent configuration files for this system onto the hard drive as instructed in procedure 7-9-11.

Note

If you were unable to download files from the damaged hard drive at the beginning of this procedure, FTP to the 8100 the configuration files stored on the backup floppy disk at the last service call.

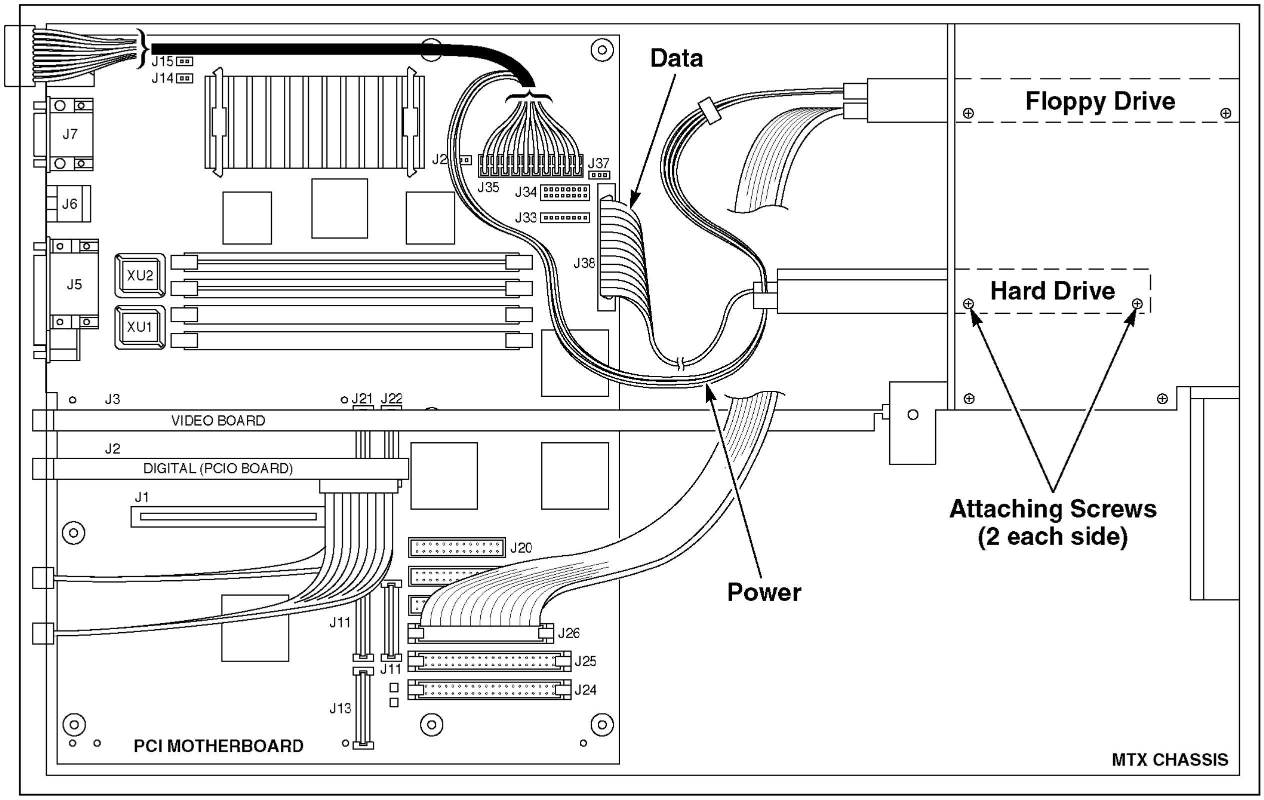


Figure 4-48. Replacing the Hard Drive

Section 5 – Tools/Preventive Maintenance/Cleaning

5-1. Required Tools

In addition to standard hand tools (screwdrivers, wrenches, etc.), the tools listed in this subsection are required to service the 8100. Note the following:

- With the exception of Items 5 through 7, the listed tools are a subset of the tools required for servicing the 969 HQ.
- Items 1 through 3 are provided to Kodak service technicians. Non-Kodak service technicians must obtain them locally.
- Items 4 through 7 are available from the Service Parts and Logistics Center (SP&LC).
- Item 8 is available from TECHNI-TOOL, Inc. If equivalent tools cannot be obtained from other sources, order tools as follows (to receive the discount price): Lotus Notes E-mail your request to CSS Technitool (and copy your manager). Include in the message the following items:

  Your name, address (to send tool to), tool part number,
  quantity required, and price (if available).

1. Notebook personal computer that meets the following minimum requirements:
   - Pentium class IBM-compatible PC with Windows™ 95 Operating System
   - 24 Megabytes of RAM
   - 1.2 Gigabyte internal hard disk
   - Internal modem, 28.8 Kbps transmission rate or better
   - Network card (10BaseT or 100BaseTX TCP/IP PCMCIA card)
   - Video screen – 800 x 600 pixels, 256 colors
   - Mouse or similar pointing device
   - Web browser software (Internet Explorer 4.0)

Note

The specifications listed above reflect the minimum configuration required to access the MPC configuration and diagnostic tools built into the laser imager software. For descriptive information on MPC, see Section 7.

2. Fluke DVM, Model 87 (or equivalent)
3. Dual trace oscilloscope meeting the following specifications:

   Band Width: 0 to 100 MHz, Sensitivity: 0.5 mv, Accuracy: ± 3%
4. Cable, MPC Serial Port 26-1011-4592-3
5. Cable, 10BaseT Crossover 96-0000-3918-8
6. Temperature Meter Kit (includes Minco temperature meter and 11-inch bar type probe, calibrated as a pair at the factory) 78-8099-9500-0 (Part number for the probe is 26-1011-8560-6.)

Note

If a new probe is ordered, the probe and meter must be sent in for calibration. See paragraph 5-2.

7. Block (for use with probe) 78-8064-5583-4
8. Static Protection Kit (includes a static dissipative work surface, a ground cord, two sizes of wrist bands, and an alligator clip) 780ST8501

5-2. Temperature Meter and Probe Calibration

The temperature meter and bar type probe must be calibrated together as a pair at least once per year. Send the meter, probe, and calibration form to:

National Calibration and Testing
6960 Madison Avenue West
Minneapolis, MN 55427

The calibration process takes approximately one week. (Send the meter and probe in for calibration prior to going on vacation. This will ensure that they will be available for use when needed.)

5-3. Serial Number Label Location

The serial number label is located on the processor frame inside the upper hood of the 8100. (See Figure 5-1.) Use this serial number to report all service activity. Customers should be instructed to provide the model and serial number when requesting service.

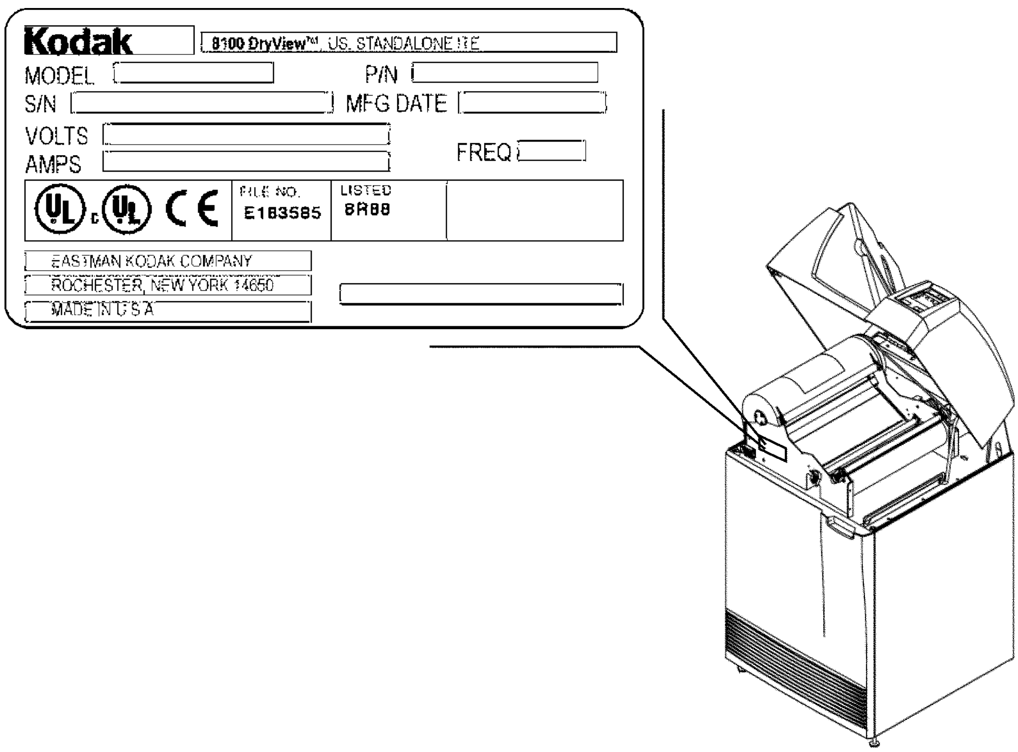


Figure 5-1. Location of Serial Number Label

5-4. Preventive Maintenance (PM)

5-4-1. PM Intervals

In order to consistently produce high quality images, the 8100 must receive periodic routine maintenance. PM procedures must be performed:

- Every EM call
- Every 10,000 machine cycles

Every 10,000 cycles the 8100 local panel displays a message prompting the user to schedule preventive maintenance (PM). (This message can be removed by pressing the **Test Prin**t and **Enter** keys simultaneously. This resets the cycle count to 10,000.) The procedures listed in the 10,000 cycle checklist (paragraph 5-4-4) should be performed as soon as possible after the 10,000 cycle PM prompt.

5-4-2. Supplies Required for PM

The expendable cleaning supplies and replacement parts required for a 10,000 cycle PM are provided in a 10,000 Cycle PM Kit (44-0022-7182-1). This kit contains the following supplies and parts for a single 10,000 cycle PM.

10,000 Cycle PM Kit Components:

1. Cleaning pads, lint-free (1 bag)	78-8018-2802-7
2. 3M™ Troubleshooter™ Cleaner (1 can)	96-0000-0066-9
3. 3M™ Brand Stainless Steel Cleaner (1 can)	96-0000-0064-4
4. Dow Corning Silicone Oil (1 bottle)	78-9998-2863-1
5. 3M™ Auto-Pak Tack Cloth (1 bag)	96-0000-0118-8
6. Static Shielding Bag (1)	78-9998-2882-1
7. Bag with Tie-wrap (1)	78-9998-2868-0
8. Developer Drum Stands (2)	34-7041-8939-7

Additional Parts Required for 10,000 Cycle PMs (Not Included in Kit)

1. Front Door Air Filter	96-0000-2755-5
2. Charcoal Filter Kit	96-0000-1639-2
3. Processor Roller Bearings (6 spares recommended)	96-0000-0404-2

Additional Supplies Required for 10,000 Cycle PMs (Not Included in Kit)

1. Insulated rubber gloves (77-8007-2908-7) – These gloves (which can be locally purchased) must be worn during procedures that require handling chemicals.
2. Isopropyl Alcohol

3. 3M™ White Non-woven Pads (20)	74-0401-6546-1
4. Lint-free cloths (TEXWIPES™)	78-8005-3779-3

Additional Parts Required for 20,000 Cycle PMs

Film Diverter Assembly	96-0000-3670-5

5-4-3. EM Call Checklist

If the number of machine cycles since the last PM is greater than 7,500, use the 10,000 Cycle PM Checklist (see next paragraph) rather than this EM Call Checklist.

❑ 1. Repair the machine problem that caused the EM call.

❑ 2. Open the upper hood, open the processor cover, and check the drum for damage. If the drum is damaged, replace it. (Perform step 3 below before installing the new drum.)

❑ 3. Clean the processor rollers (without disassembly). Use a soft, lint-free pad to wipe the rollers clean with alcohol or stainless steel cleaner.

❑ 4. If you installed a new drum, calibrate drum temperature as instructed in paragraph 3-1).

❑ 5. Back up the configuration files as instructed in paragraph 7-9-10.

5-4-4. 10,000 Cycle PM Checklist

Every 10,000 machine cycles, perform *all* the following procedures in the indicated order:

❑ 1. Remove and check the drum. (See paragraph 5-4-6.)

❑ 2. Remove the heat shield and processor rollers. (See paragraph 5-4-7.)

❑ 3. Clean the drum. (See paragraph 5-4-8.)

❑ 4. Clean the heat shield and processor rollers. (See paragraph 5-4-9.)

❑ 5. Clean the film diverter assembly. (See paragraph 5-4-10.)

❑ 6. Reinstall the heat shield and processor rollers. (See paragraph 5-4-11.)

❑ 7. Reinstall and condition the drum. (See paragraph 5-4-12.)

❑ 8. Clean the exposure platen. (See paragraph 5-4-13.)

Note

After completing cleaning, place the used cleaning pads in a bag (78-9998-2868-0). Tie-wrap the bag and dispose of it properly.

❑ 9. Replace the front door air filter. (See paragraph 5-4-14.)

❑ 10. Replace the charcoal filter. (See paragraph 5-4-15.)

❑ 11. Complete the PM procedures. (See paragraph 5-4-16.) (This includes checking that image quality is acceptable to the customer, backing up the configuration files, and recording the PM call in MPC.)

Note

Make sure the 10,000 cycle print count has been reset on the local panel so the system will prompt when it is time for the next PM. (Pressing **Test Print** and **Ente**r simultaneously resets the count.)

5-4-5. 20,000 Cycle PM Checklist

Every 20,000 machine cycles, perform all the steps listed above for the 10,000 cycle PM, except: In Step 5 <u>replace and adjust</u> the film diverter assembly rather than cleaning it. Before installing the new assembly, make sure to thoroughly clean the adjacent area in the processor as described in paragraph 5-4-10.

5-4-6. Removing and Checking the Processor Drum

Supplies Required

Drum Stand

A waste container, preferably a sink, is needed to clean the drum and rollers. If a sink is not available, an empty 14 by 17 inch **DryView** Film Cartridge can be used. Be aware that the processor cleaning procedure produces fumes which may be objectionable to those nearby. Try to find a cleaning area where complaints will be minimized.

Tools Required

Phillips screwdriver

Procedure

1. Remove the film cartridge, power down, and disconnect the power cord.

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8100. These voltages can cause severe injury or death.

2. Raise the upper hood.
3. Remove nine screws and remove the rear service panel. (This makes it easier to perform steps 4 and 5).
4. Disconnect the two electrical cables extending from the drum. (See Figure 5-2.)
5. Lift the belt tensioner (Figure 5-2) to provide slack in the belt, and remove the belt from the drum pulley.

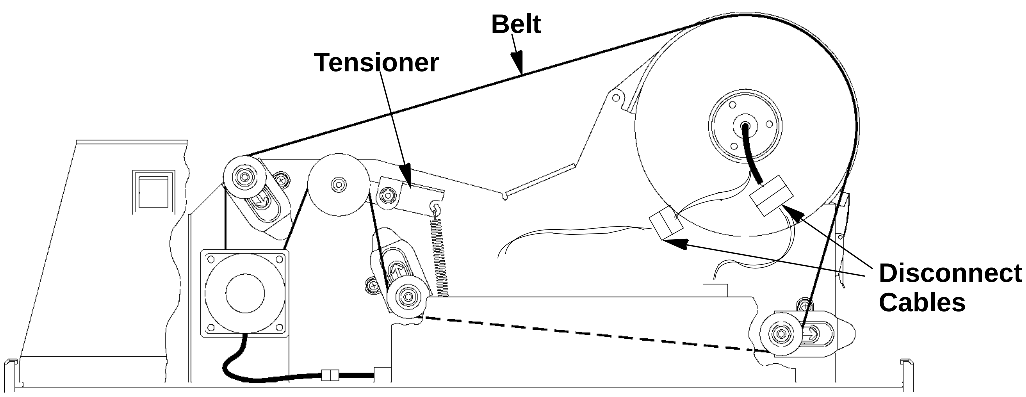


Figure 5-2. Disconnecting the Drum Cables and Drive Belt

Caution

Hot Surface

When the imager is initially powered down, the processor drum and rollers are hot. Take care while working in this area.

6. Release the clamps (see Figure 5-3) from the cover of the drum, and open the cover.

Caution

The drum and processor rollers are still warm. Handle with care.

The surface of the drum is easily damaged by fingernails and jewelry. Before handling the drum, remove any jewelry (rings, bracelets, watches, etc.) that could accidentally contact the drum surface. Do not touch the silicone surface.

7. Grasp the pulley on one end of the drum. Then grasp the end cap on the other end and remove the drum.

Caution

To avoid possible damage, do not lay the drum on its silicone surface. Set the drum on a drum stand. See Figure 5-3.

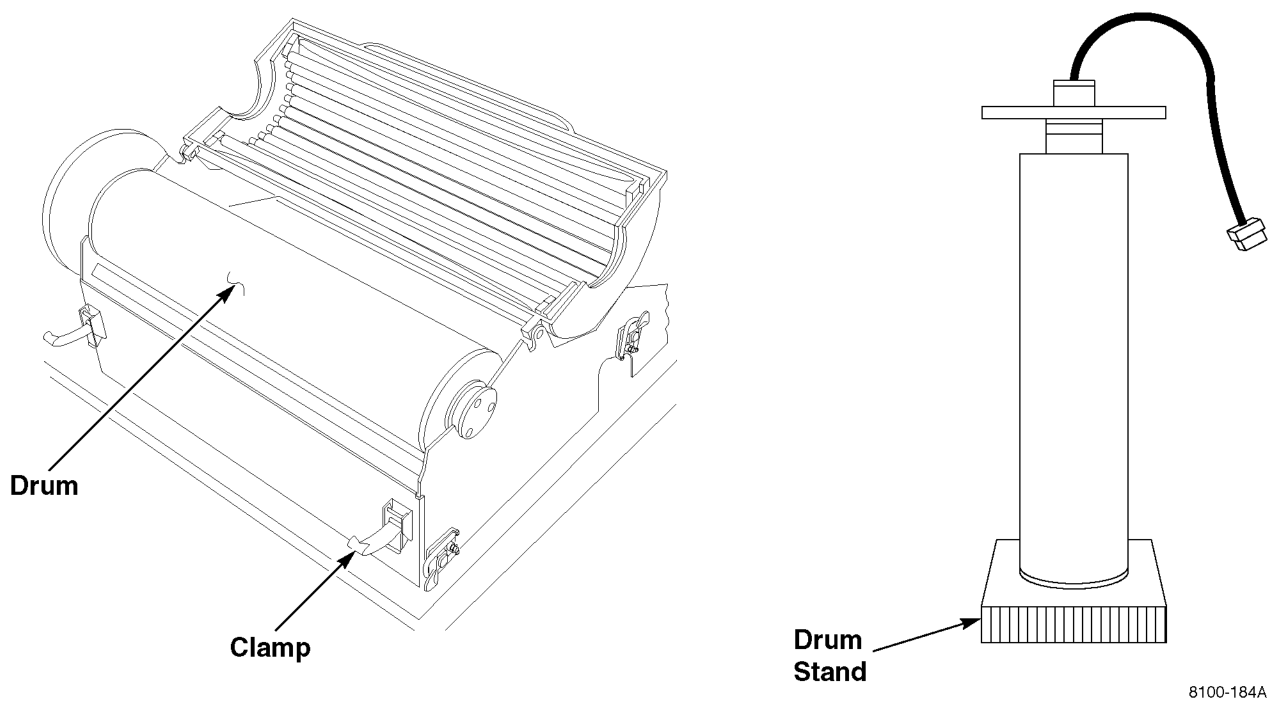


Figure 5-3. Removing the Processor Drum

8. Examine the surface of the drum for damage in the film path area. Look for cuts and gouges.

Note

If the drum is damaged, do not proceed with drum cleaning. The drum must be replaced. However, the other components of the processor must be cleaned.

9. Proceed to paragraph 5-4-7.

5-4-7. Removing the Heat Shield and Processor Rollers

Tools and Supplies Required

Protective gloves

Procedure

Caution

The processor rollers and heat shield are still warm. Handle with care.

1. Remove the heat shield from the processor.
2. To remove the rollers, simply lift each roller from the retainer clips at each end (see Figure 5-4). (The bearings on the ends of the rollers are loose. Take care not to lose them.)

Caution

When handling the rollers, be careful not to jam or bend the end bearing journals, or bend the rollers by abusive handling. The result will be processor banding.

3. Set the bearings aside. They do not have to be cleaned.
4. After removal, place the rollers and heat shield in a sink (or empty cartridge).
5. Proceed to paragraph 5-4-8.

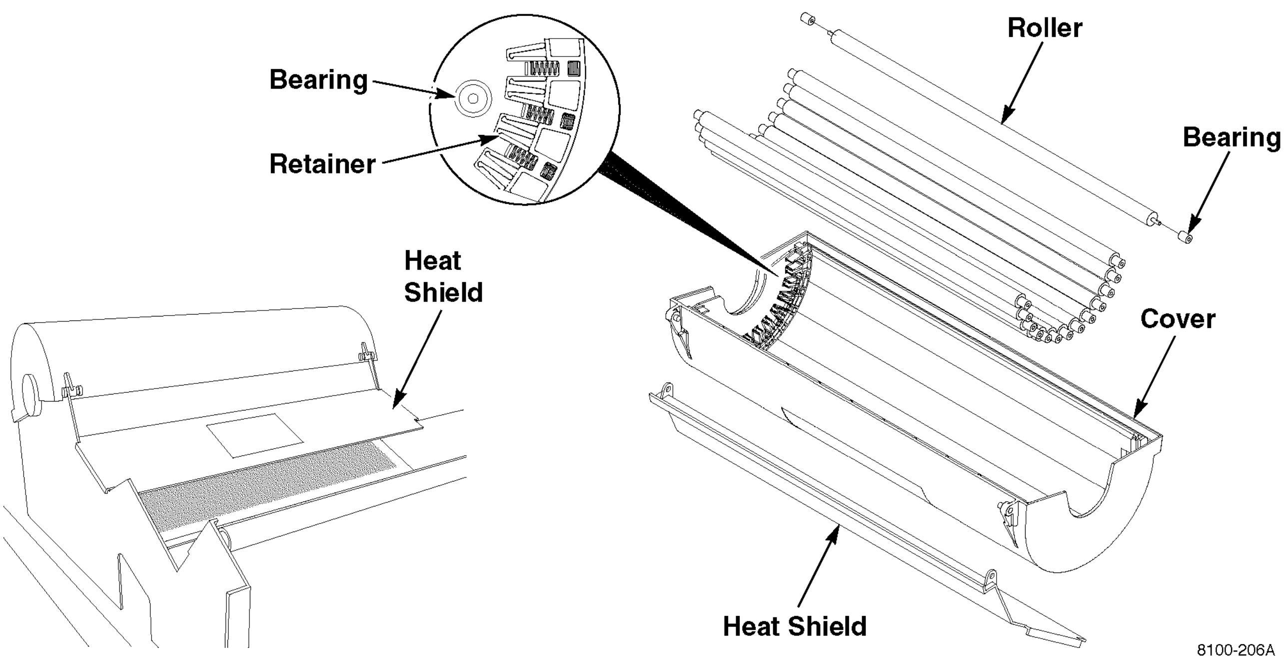


Figure 5-4. Removing the Heat Shield and Processor Rollers

5-4-8. Cleaning the Drum

Supplies Required

Lint-free cleaning pads

3M white non-woven pads

Troubleshooter™ cleaner

Stainless steel cleaner

Protective gloves

Drum stand and static shielding bag

Procedure

Caution

Using Troubleshooter cleaner will cause fumes which may be objectionable. Check with personnel in the area before proceeding. The rollers and drum should be warm, but not hot during cleaning.

Note

Wear protective gloves while cleaning.

1. Before cleaning the drum, spread out the processor rollers and heat shield on the bottom of the sink (or empty cartridge). Then spray them with Troubleshooter until they are entirely covered with the cleaner (about 1/3 to 1/2 of the can). Allow them to soak for at least 5 minutes while you are cleaning the drum.
2. Place the drum (seated on a drum stand) in the sink or empty cartridge, and place a static shielding bag over the electronic components on the top of the drum.
3. Clean the drum with Troubleshooter as follows:
   a. While rotating the drum, spray it with Troubleshooter in a downward, sweeping motion. Make sure you spray the whole area of the drum that contacts film.
   b. After about a 5 minute wait, rotate the drum and wipe off the Troubleshooter in a sweeping motion.
   c. Continue wiping until you remove most of the Troubleshooter.

   Caution

   DO NOT rub a dry drum.

   d. If you encounter buildup on the drum, scrub **lightly** with a 3M white non-woven pad as needed to remove it.

   Caution

   Overaggressive use of the non-woven pad can damage the drum.

   e. Repeat steps a through d.
4. Clean the drum with stainless steel cleaner by spraying and wiping in two cycles as described for cleaning with Troubleshooter in step 3. Then set it aside for later reconditioning and reinstallation.

5-4-9. Cleaning the Heat Shield and Processor Rollers

Supplies Required

Lint-free cleaning pads

3M white non-woven pads

Troubleshooter™ cleaner

Protective gloves

Spare roller bearings

Isopropyl alcohol

Procedure

1. Wipe the rollers and heat shield to remove the Troubleshooter.
2. If necessary, lightly scrub the rollers and heat shield with a non-woven pad.
3. Rinse the rollers and heat shield with hot water and wipe them dry.
4. Scrape any remaining FAZ off the rollers with your thumbnail or a small piece of film.
5. Set the rollers and heat shield aside for later reinstallation.
6. Wipe clean the insulation inside the cover with alcohol and a cleaning pad (see Figure 5-5).

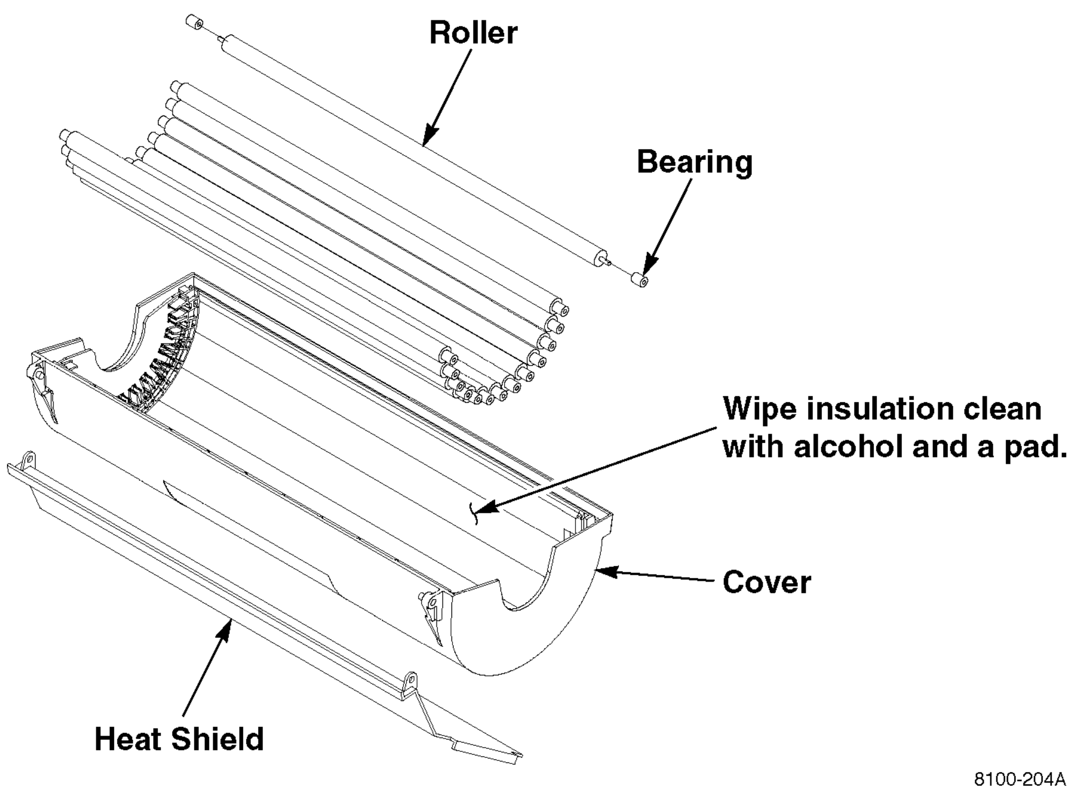


Figure 5-5. Cleaning the Heat Shield and Rollers

5-4-10. Cleaning or Replacing the Film Diverter Assembly

The Film Diverter Assembly must be cleaned after 10,000 cycles of use, and replaced after 20,000 cycles.

Supplies Required

Lint-free cleaning pads

Isopropyl alcohol

New Film Diverter Assembly (required only for 20,000 cycle PMs)

Tools Required

No. 2.5 Allen wrench

Cleaning the Film Diverter Assembly (After 10,000 Cycles of Use)

1. With the film diverter mounted in place, clean the bottom only of the blade by scraping the residue from it with a straight edge. (See Figure 5-6, View A).

Caution

To avoid damaging the assembly, do not use a sharp instrument for cleaning, and do not attempt to scrape the top of the blade or the felt pad.

2. After scraping, wipe both sides of the diverter blade with alcohol and a cleaning pad.

Cleaning the Area Adjacent to the Film Diverter (Every 10,000 Cycles)

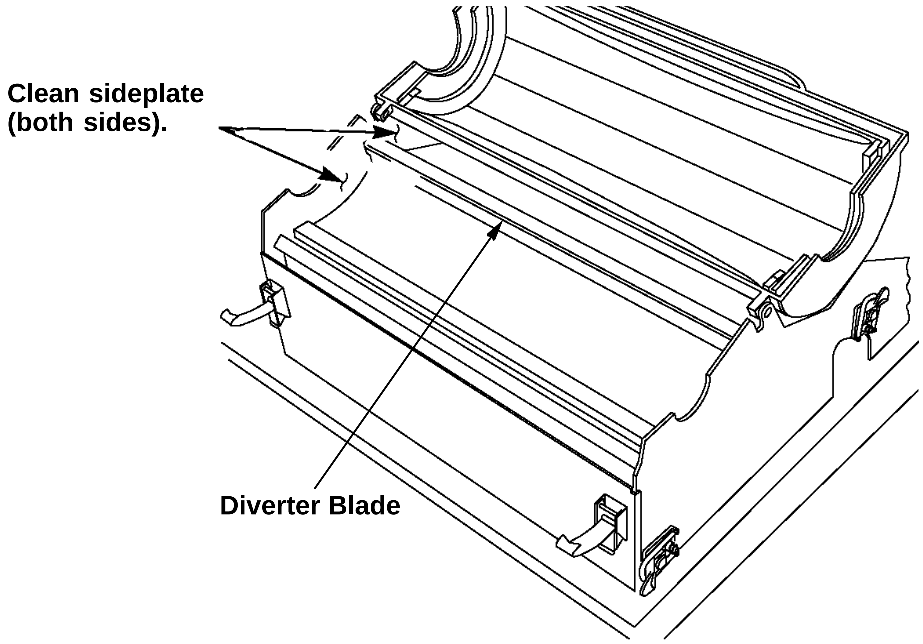
1. Clean the processor sideplates and the mounting bracket for the diverter assembly (see Figure 5-6, View A) by scraping away the residue with a knife or straight blade.
2. After scraping, thoroughly vacuum the area. (Also vacuum the hood if debris is present.)
3. Wipe clean the sideplates and mounting bracket with alcohol and a cleaning pad.

Installing a New Film Diverter Assembly (After 20,000 Cycles of Use)

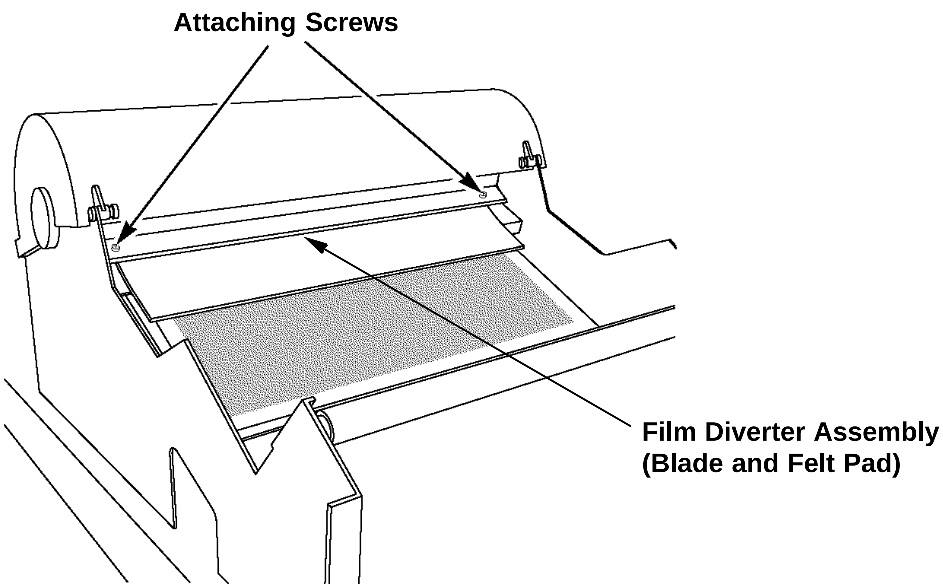
1. Remove two screws (see Figure 5-6, View B) and remove and discard the used film diverter assembly.
2. Mount the new film diverter assembly, but do not tighten the two attaching screws.

Note

The position of the diverter blade must be adjusted after the drum is replaced in paragraph 5-4-12.



View A. Cleaning



View B. Replacement

Figure 5-6. Cleaning or Replacing the Film Diverter Assembly

5-4-11. Reinstalling the Heat Shield and Processor Rollers

1. Reinstall the heat shield.
2. Install each roller in the cover assembly as follows:
   a. Install a bearing on each end of the roller, and make sure that each retainer clip includes a spring.
   b. Insert the bearings (with roller) into the retainer clips as shown in the insert in Figure 5-7.
   c. Check that the roller floats and rotates freely.

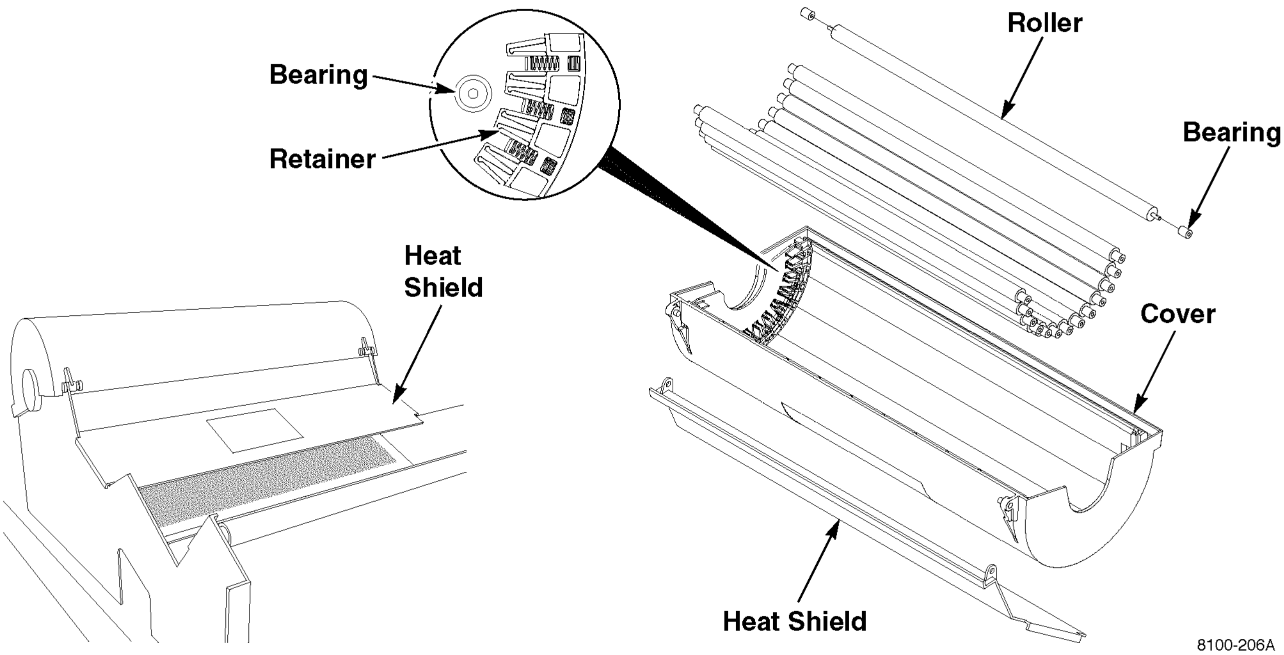


Figure 5-7. Reinstalling the Heat Shield and Rollers

5-4-12. Reinstalling and Conditioning the Drum

Supplies Required

Dow Corning silicone oil (drum conditioner)

Lint-free cloths (TEXWIPES™)

Protective gloves

Procedure

1. Install the drum in the processor.
2. Connect the power cord and power up the imager. Allow the drum to warm up about 5 minutes.
3. Use a TEXWIPE to rub silicone oil over the surface of the drum.
4. Repeat the process to thoroughly rub oil into the surface of the drum.
5. Use the oil-soaked TEXWIPE to:
   - Lightly coat the processor rollers with silicone oil. (Rotate the rollers to cover all surfaces.)
   - Lightly coat the film diverter blade with silicone oil.
6. If the film diverter assembly was replaced (20,000 cycles), adjust blade position as follows:
   a. With the two attaching srews loosened, slide the diverter blade toward the drum (see Figure 5-8).
   b. Set the gap between the diverter blade and drum end caps at 0.015 to 0.020 inch.
   c. Tighten the two attaching screws.
   d. Verify the gap, and readjust as necessary.
7. Close and latch the drum cover.
8. Load a cartridge of “transport” (scrap) film in the 8100.
9. Run about 15 sheets of film through the imager to remove excess cleaning materials.

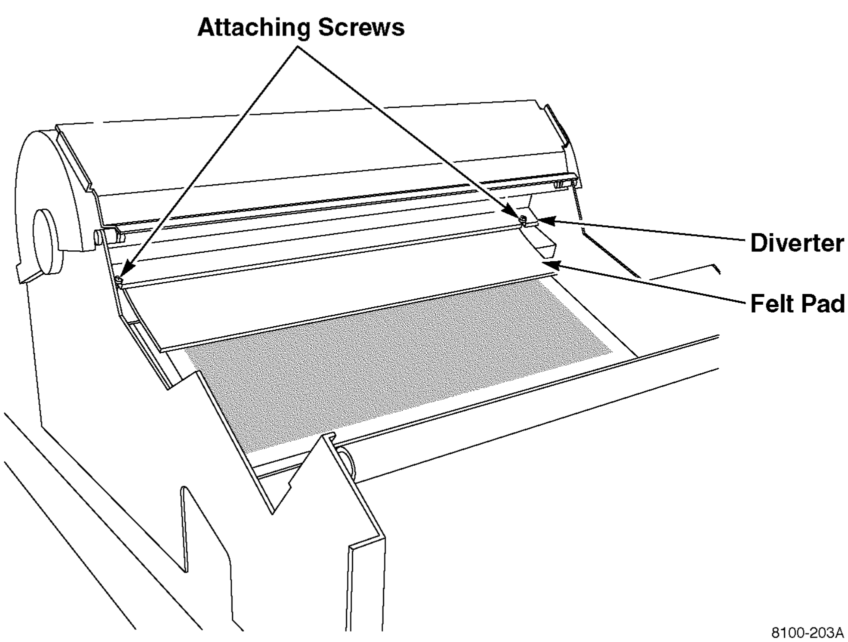


Figure 5-8. Adjusting the Diverter Blade

5-4-13. Cleaning the Exposure Platen

Supplies Required

3M™ Auto-Pak™ Tack Cloth

Cleaning

1. Open the front door.
2. Open the platen access door by sliding the insert handle to the left and pulling out. (See Figure 5-9.)

Caution

The anti-reflective surface of the platen is easily damaged by fingernails and jewelry. Prior to cleaning the platen, remove any jewelry (rings, bracelets, watches, etc.) which may accidentally come in contact with the platen.

Take care not to snag the cleaning cloth on the centering arm at the bottom of the platen. If the Auto-Pak cloth catches on parts inside the platen, take care not to damage the parts when removing the cloth. Check for and remove any torn pieces of cloth.

3. Reach through the platen door and use a 3M Auto-Pak Tack Cloth to clean the inside of the platen (see Figure 5-9). Thoroughly clean the complete curved bottom surface of the platen assembly.

Note

The Auto-Pak cloth will not remove large particles. Use a flashlight and fingers to remove large particles.

4. When you have finished cleaning, close and latch the platen access door, and close the front door.

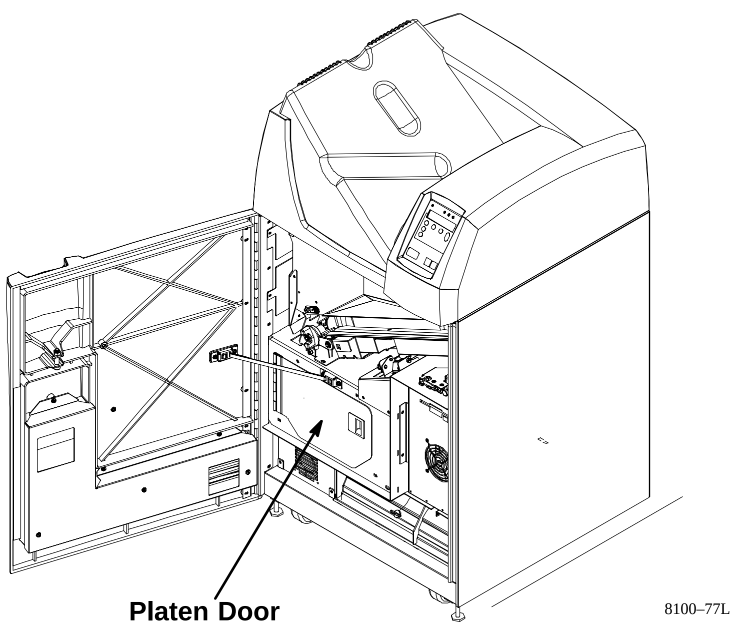


Figure 5-9. Cleaning the Platen

5-4-14. Replacing the Front Door Air Filter

Supplies Required

New filter

Phillips screwdriver

Procedure

1. Remove the supply cartridge.
2. Open the front door.
3. Remove six attaching screws (see Figure 5-10).

Warning

When the front door is open, all motors and the laser are disabled, but power remains applied to the system.

4. Pull off the cover (with gasket and filter retainer).
5. Remove the filter and replace it with a new filter.
6. Reassemble.

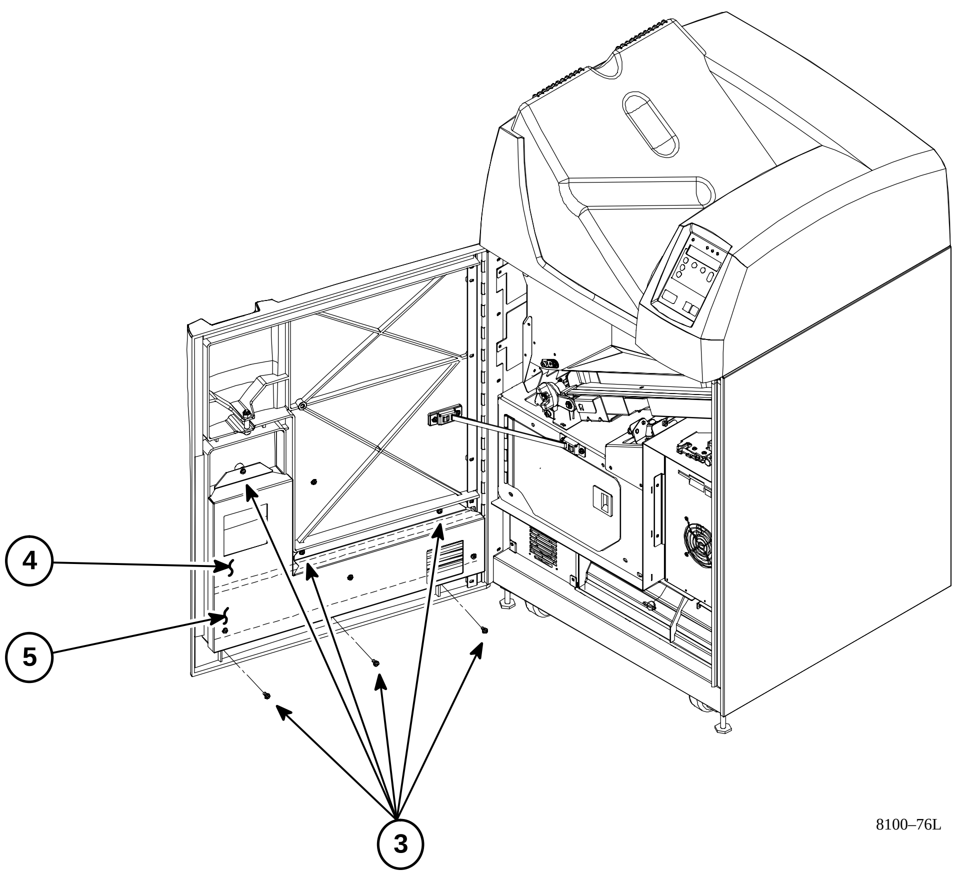


Figure 5-10. Replacing the Front Door Air Filter

5-4-15. Replacing the Charcoal Filter

Supplies and Tools Required

New charcoal Filter

Procedure

1. Open the front door.
2. Push the retaining clip on the top front of the filter back and up (see Figure 5-11) and pull out the old filter.
3. Slide the new filter in all the way to the back stop.
4. Pull the retaining clip forward and down to lock the filter in position. Then close the front door.

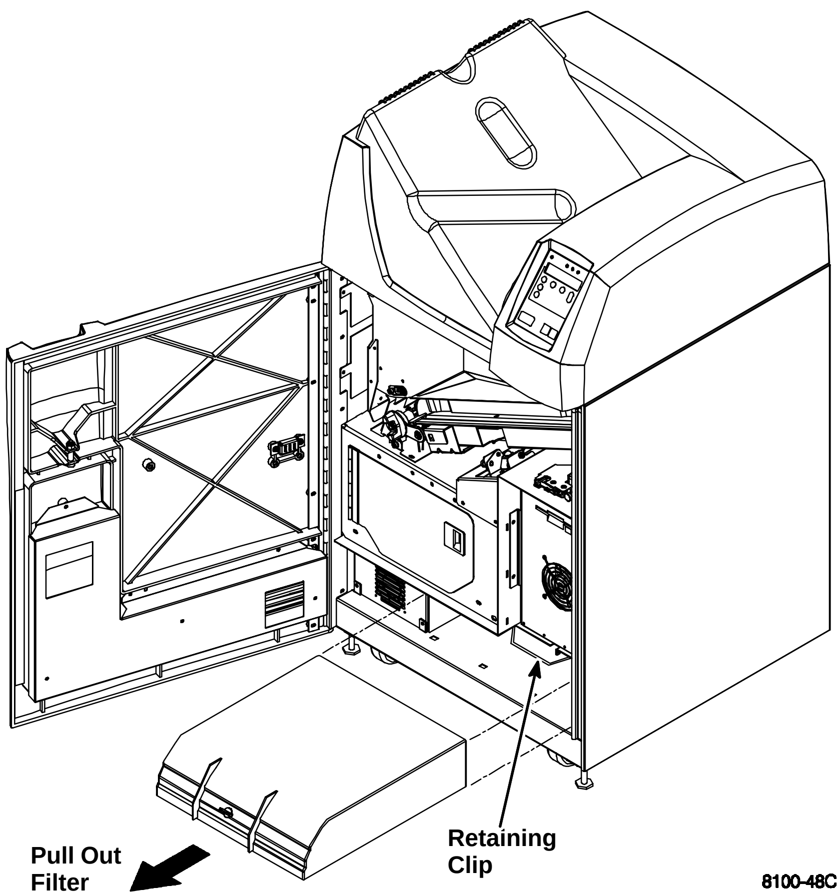


Figure 5-11. Replacing the Charcoal Filter

5-4-16. Completing the PM

1. After performing the PM procedures, load a cartridge of good film, run prints, and confirm with the customer that image quality is acceptable.
2. Back up the configuration files as instructed in paragraph 7-9-10.
3. Use the Service PC to access the Service History Log in MPC, and record the PM call.
4. Make sure the P550 prompt is reset in the Local Panel. (Press **Test Print** and **Enter** simultaneously to reset the prompt.)

5-5. Cleaning the Optics Module (Newer Modules with Slotted Covers)

Note

This procedure is not part of periodic maintenance (PM). It is to be performed only if image quality complaints indicate that dust is lodged on flexible Lens L3 in the Optics Module.

Before performing this procedure, close the film cartridge and open the front door. Open the access door to the Platen Assembly and check whether the Optics Module has the new-style cover that includes a cleaning slot with magnetic cover. If it does, proceed with the current procedure. If it has the old style cover (no slot and magnetic cover) use the procedure in paragraph 5-6.

Symptom: Light density streak across the 14-inch dimension of the film.

Required Tools:

Optics Module Cleaning Kit (74-0401-8238-3). The kit includes a duster canister with chrome trigger valve, and a hose with custom nozzle.)

Note

Refill duster canisters can be ordered under part number 74-0401-8256-5.

Procedure:

1. Use a printed film as a guide to determine the location of the dust on semicircular Lens L3. Observe the following guidelines:
   - If the horizontal light streak is in the top portion of the image, a particle of dust may be found at the right side of Lens L3.
   - If the horizontal light streak is in the middle portion of the image, a particle of dust may be found on the bottom part of Lens L3.
   - If the horizontal light streak is in the bottom portion of the image, a particle of dust may be found on the left side of Lens L3.
2. Reach in through the platen access door and lift the magnetic flap to expose the slot in the Optics Module cover.
3. Insert the nozzle into the exposed slot.
4. Hold the Duster canister upright and spray in short bursts while moving the nozzle back and forth along the slot. DO NOT tilt, invert or shake the can during use.
5. Remove the nozzle. Close the platen access door and the front door.
6. Run a film and check that the light streak has been eliminated.

5-6. Cleaning the Optics Module (Earlier Modules with Covers without Cleaning Slot)

Note

This procedure is not part of periodic maintenance (PM). It is to be performed only if image quality complaints indicate that dust is lodged on flexible lens L3 in the Optics Module.

Before performing this procedure, close the film cartridge and open the front door. Open the access door to the Platen Assembly and check whether the Optics Module has the new-style cover that includes a cleaning slot with magnetic cover. If it does, use the cleaning procedure in paragraph 5-5. If it has the old style cover (no slot and magnetic cover) use this procedure.

Symptom: Light density streak across the 14-inch dimension of the film.

Required Tools:

Vacuum cleaner (with nozzle reversed to 45 degree angle)

Philips screwdriver

Procedure:

1. Power down and remove the Imaging Module from the 8100 (see paragraph 4-11-1).
2. To avoid introducing dust into the assembly, place the Imaging Module in a clean area for disassembly.

Caution

Do not touch the polished optics rails when you move optics carriage in the next step.

3. Rotate the Translation Motor slightly to move the capstan tire away from the flywheel (see Figure 5-12). Then move the optics carriage to the center of the rails.
4. Remove the cable guard plate by removing three screws (see Figure 5-12). Then flip the guard over, being careful not to kink the flat cable.
5. Use the vacuum to carefully clean the top of the Optics Module and the interior of the platen.
6. Remove six screws securing the half-circle optics cover. (Hold onto the cover while removing the last screw.)

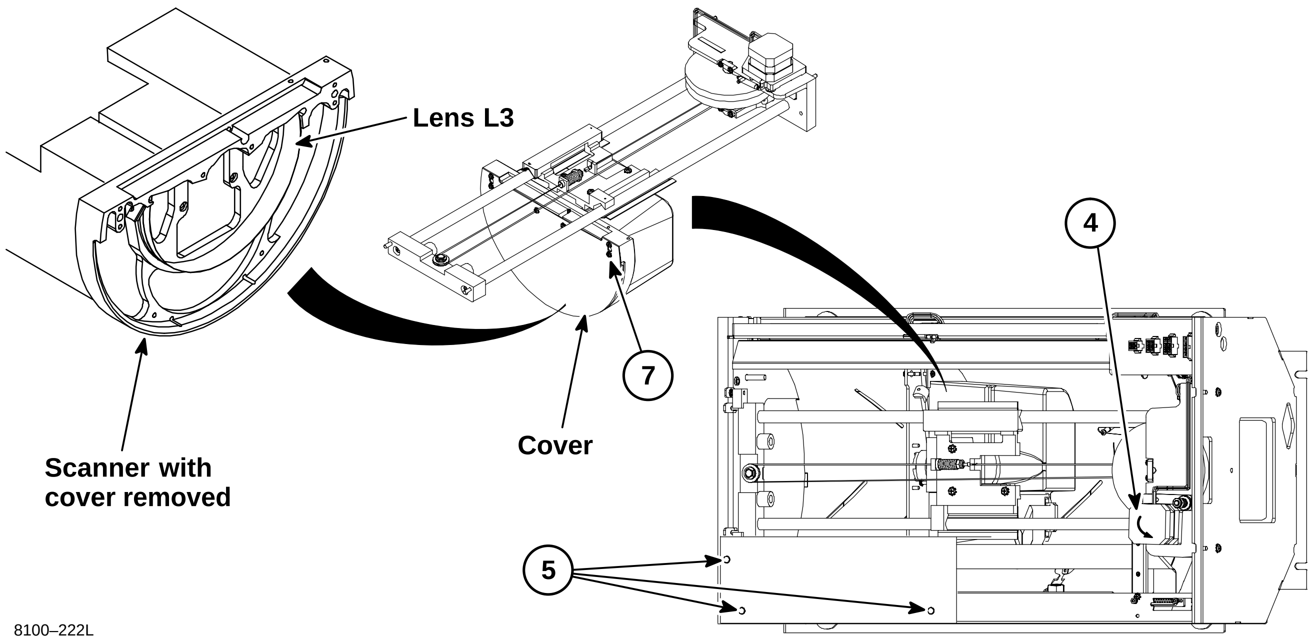


Figure 5-12. Cleaning the Optics Module

7. Inspect semicircular Lens L3 for dust. Use the problem film to help locate possible dust on Lens L3. Observe the following guidelines:
   - If the horizontal light streak is in the top portion of the image, a particle of dust may be found at the right side of Lens L3.
   - If the horizontal light streak is in the middle portion of the image, a particle of dust may be found on the bottom part of Lens L3.
   - If the horizontal light streak is in the bottom portion of the image, a particle of dust may be found on the left side of Lens L3.
8. Remove the dust by placing the tip of the vacuum cleaner about 3 to 5 mm from Lens L3. DO NOT place it directly above or below the lens, and DO NOT touch the lens.
9. Clean the optics cover with the vacuum and then reinstall it.
10. Reinstall the cable guard plate.
11. Move the optics carriage back to the home position. (Be careful not to touch the polished rails.)
12. Reinstall the Imaging module in the 8100. Remember to connect the four cable connectors on the right side and the gray ribbon cable on the left side.)
13. Run a film and check that the light streak has been eliminated.

Section 6 – Theory of Operation

6-1. General

This section describes operation of the primary laser imager subsystems and provides information on hardware and software features that affect image quality control. It includes descriptions of the following (see Figure 6-1):

- The Image Management System (IMS). (See paragraph 6-2.)
- The Machine Control System (MCS). (See paragraph 6-3.)
- Automatic Image Quality Control (AIQC) and Gray Scale Manager (GSM). (See paragraph 6-4.)

Detailed functions of the IMS and MCS are illustrated on the system block/wiring diagrams in Section 9. Sheet 1 of the diagrams shows the IMS and sheet 2 shows the MCS.

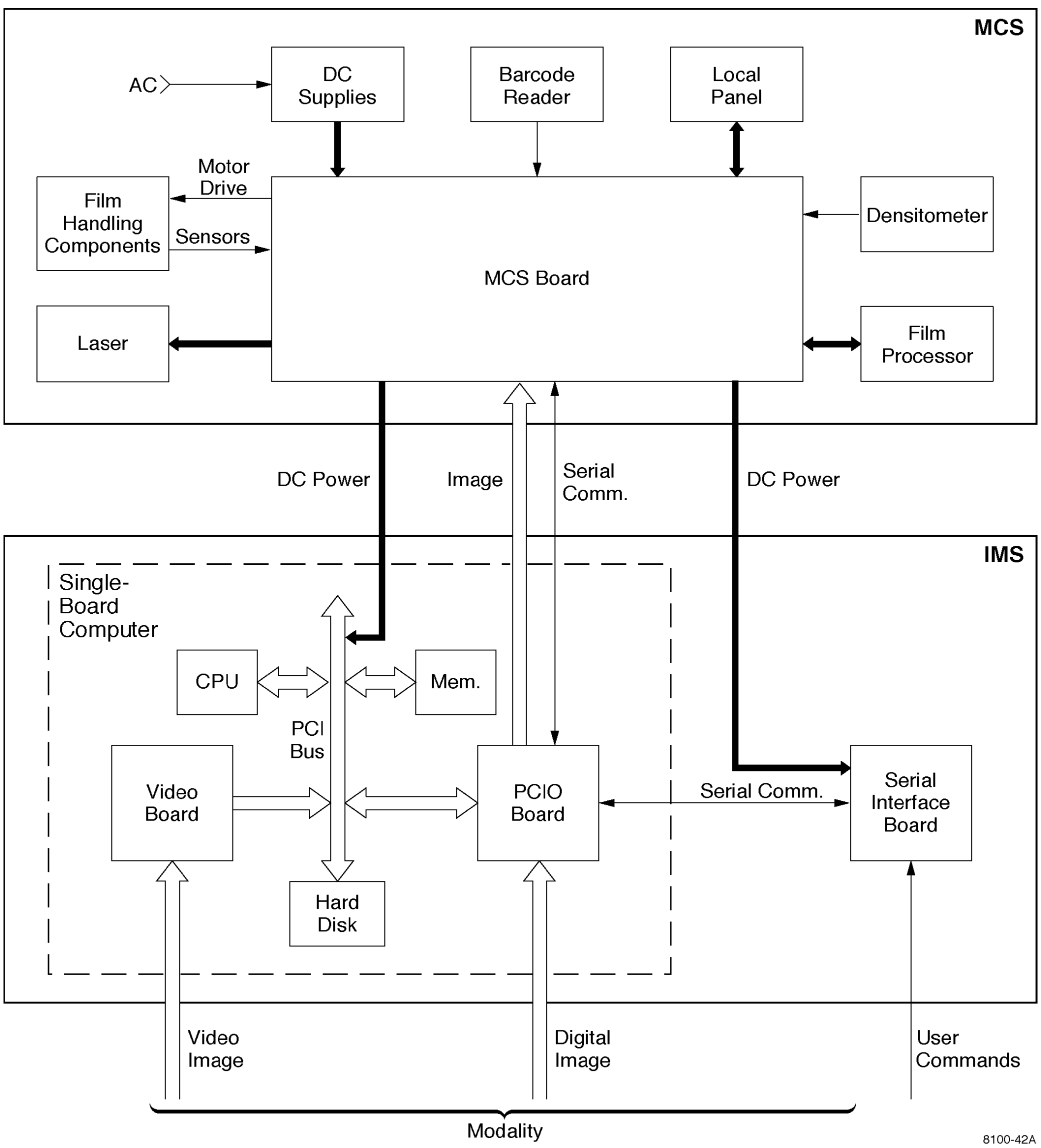


Figure 6-1. DryView 8100 Laser Imager Block Diagram

6-2. The Image Management System (IMS)

The IMS acquires, filters, and formats the image and sends it to the MCS, which controls the laser imaging process. As illustrated in Figure 6-1, the IMS includes the following major components:

- Single Board Computer with Hard Disk—This computer system is used to format the image (from either a digital or video source) before it is sent to the MCS. The images, received from the host by either the PCIO Board (digital) or Video Board, are sent to the computer on the PCI Interface Bus. The computer formats them in memory and on the hard disk, then returns them on the bus to the output circuits of the PCIO Board for transmission to the MCS. (See paragraph 6-2-1.)
- PCIO Board—This board, which plugs into the PCI Interface Bus, accepts digital images from a host modality into its input circuits and sends them on the PCI Interface Bus to the computer/hard disk. After image formatting, the computer sends the images to the output circuits of the PCIO Board, which route them to the MCS. (See paragraph 6-2-2.)
- Video Board—This board, which also plugs into the PCI Interface Bus, is required only if the host uses video imaging. It acquires and digitizes the video images and sends them to the single-board computer for formatting. The formatted images are sent on the PCI Interface Bus to the PCIO Board output circuits for transmission to the MCS. (See paragraph 6-2-3.)
- Serial Interface Board—This board is the physical interface to the IMS for user commands either from a host computer or keypad. (See paragraph 6-2-4.)

6-2-1. Single Board Computer and Peripherals

The majority of the IMS components (all except the Serial Interface Board) are housed in a chassis which contains a single-board computer, a hard disk drive, and a floppy drive (see Figure 6-2). All components are powered by dc (+5, ±12 vdc) from the **DryView** 8100 dc power supply, routed through the MCS.

The main components of the computer subsystem are the following:

- Microprocessor—Image management in the IMS is controlled by a microprocessor running on a 66 MHz processor bus. The processor communicates with main memory on this bus and with other peripherals on a PCI bus (33 MHz, 32/64-bit) across interface circuits between the processor bus and the peripherals (see Figure 6-2).
- Main Memory—Main memory (32 MB) is contained in two DIMM modules which plug into sockets on the computer motherboard. In these memory modules the images received from the modality are rotated, scaled to desired size and then transferred to the hard disk for further formatting. When a print request is received, the images are sent from disk back to main memory, where they are further processed and rasterized for scan-line by scan-line transfer to the PCIO Board and the MCS.
- Hard Disk Drive—The hard disk contains the software that controls image processing. It also serves as a storage area for acquired images before they are sent to memory for final processing immediately before printing. The disk drive is partitioned in four volumes, as shown in Figure 6-3.
- Floppy Diskette Drive—Not used.

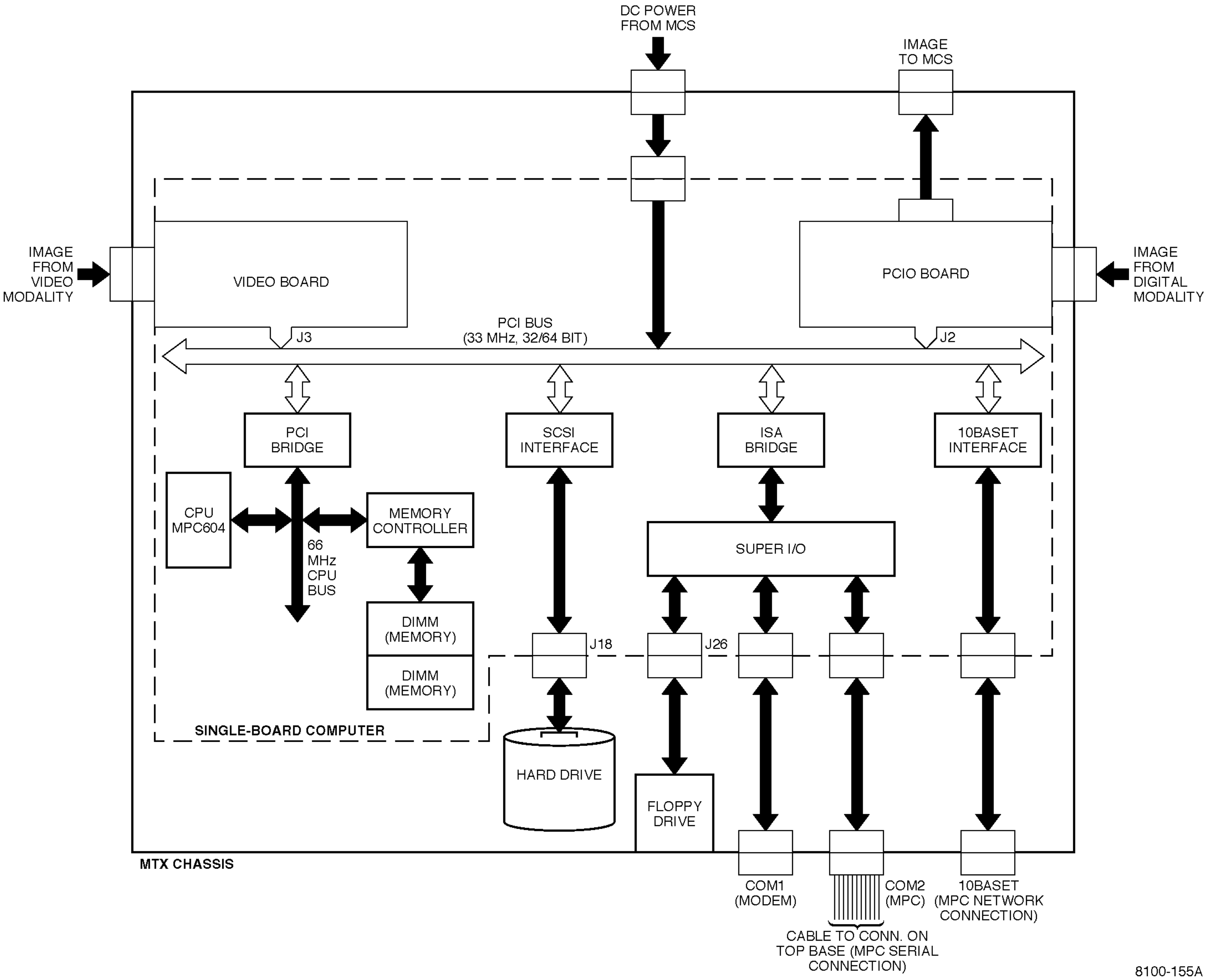


Figure 6-2. Computer and Peripherals

Volume 4.0.1 – Contains programs, boot file, system configuration files, old log files, www tree, canned image files.
Volume 4.0.2 – Mirror/backup of 4.0.1.
Volume 4.0.3 – Scratch work area.
Volume 4.0.4 – Print job temporary files, captured image files, current log files.

Figure 6-3. Hard Disk Partitions

6-2-1-1. Image Input from the Modality

Image formatting, controlled by image processing software and the microprocessor, occurs mainly in main memory (DIMM modules) and on the hard disk, as described in the following paragraphs. The image is acquired from the modality in either video or digital format.

Video Modality—The image from the video modality is captured by the Video Board, digitized, and placed in a memory buffer on the Video Board. From this buffer the image is sent via the PCI bus to IMS main memory. Maximum video image size 2048 pixels by 2048 lines (either 8 bit or 10 bit).

Digital Modality—The image from the digital modality is acquired via the input circuits on the PCIO Board. Then it is sent via the PCI bus to IMS main memory. Maximum image size is 4361 pixels by 5223 lines (4620 pixels by 5596 lines, including borders and overscan).

6-2-1-2. Image Processing in Main Memory

Because the **DryView** 8100 scans the “long” way on the page, the acquired image has to be rotated to accommodate it to the 17 by 14 inch page (see Figure 6-4). The image is also “scaled” to convert 8-bit pixels to 13 bits (12 bits data plus 1 bit parity). These processes occur in main memory. After this initial processing the image is transferred to the temporary storage area on the hard disk.

When a print request is received, the image data is retrieved from disk and placed in buffers in main memory. There the image is processed on the fly to customize it per user requests (contrast and density) and film characteristics measured in calibration. The page format is set up and images are sized (interpolated) as requested by the user. Then the image data is rasterized and sent out, scan line by scan line, to the PCIO Board, which sends it to the MCS for printing.

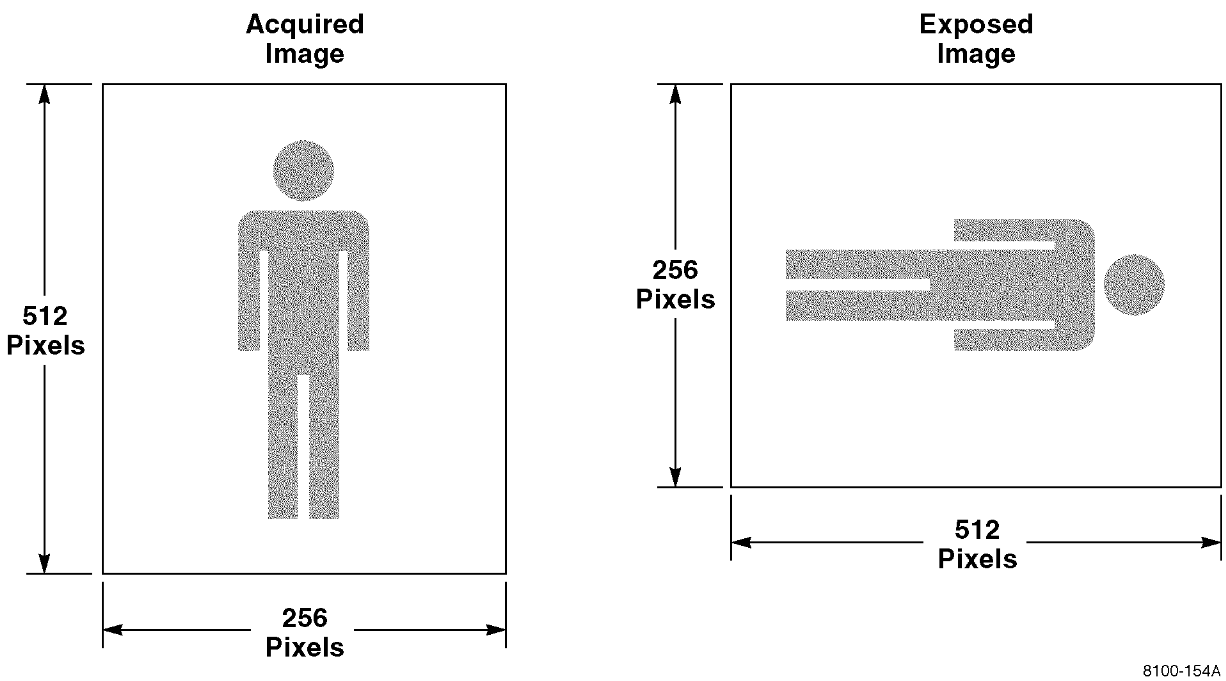


Figure 6-4. Image Rotation

6-2-2. PCIO Board

The PCIO Board plugs into the PCI Motherboard Bus of the Single-Board Computer. Thus it is “on-line” with the microprocessor, DIMM memory and hard disk of the computer system. The digital image cable from the modality plugs directly into the input side of the PCIO Board, and the image cable from the IMS to the MCS plugs into the output side of the board. The PCIO Board provides the following interfaces for image data and serial communications data brought into the IMS (see Figure 6-5):

- A 12-bit digital input circuit for handling pixel data received from a digital modality.
- A 12-bit digital output circuit for handling pixel data to be sent to the MCS. The data can be either from the digital input circuit or from the Video Board. (Video images bypass the digital input circuit.)
- A UART channel for serial communication with the user and the MCS.

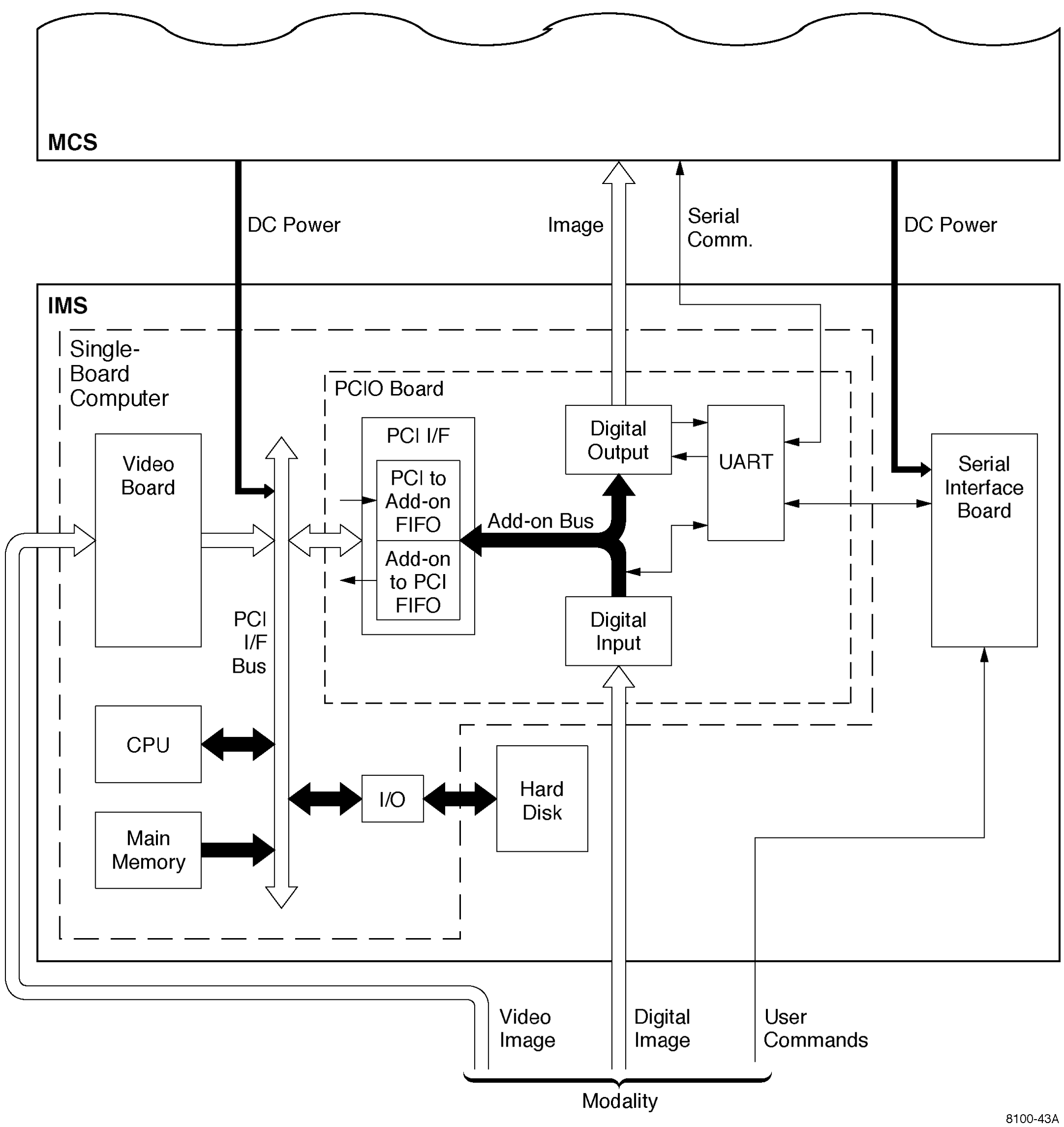


Figure 6-5. IMS Components (General)

6-2-2-1. Digital Input Circuit

The digital input circuit consists of components that receive, latch and buffer the image data sent to Connector J1 on the PCIO Board from a host digital source. (This circuit is not used for video images.) See sheet 1 of the functional diagrams in Section 9.) The definitions of the differential lines at the input connector are as follows:

- D0 to D11—Pixel data driven by the host to the PCIO.
- PAR—Parity (even, odd, or not used), driven by the host to the PCIO.
- MODE—A line driven by the host to the PCIO indicating that accompanying data is a special control byte.
- STROBE—A rising edge active signal driven by the host to the PCIO indicating that information on the data, parity and mode lines is valid and should be latched.
- REQ—Request, driven by the PCIO to the host requesting a line of data.
- RET—Retransmit, driven by the PCIO to the host requesting that the last line of data be sent again. (It included a parity error.)

The input data is latched after passing through differential receivers, and then input to an "External" FIFO. The Digital I/O Controller FPGA handles clocking data into and out of this FIFO. As data becomes available in the External FIFO, it is transferred to the Add-on to PCI FIFO in the PCI Interface chip. When this FIFO fills, it bursts its data out onto the PCI interface (PCI Motherboard Bus), from where it is transferred to IMS main memory. The image is formatted in main memory and on the hard disk. It is then routed back, scan line by scan line, on the PCI interface to the PCI to Add-on FIFO in the PCI Interface chip, where it is available for output to the MCS. A digital transfer of data in the digital input circuit consists of the following sequence:

1. The IMS software receives an "acquire" command.
2. IMS software resets the input section of the PCIO Board, then configures the input circuit for number of bits, parity, etc.
3. IMS software asserts the REQ signal to the host on the digital interface.
4. The host responds by sending the header portion of the digital transfer, consisting of the following:
   - Two control transfers
   - Two bytes encoding the number of pixels per line
   - Two bytes encoding the number of lines per image.
   - A single control transfer.

   The three control transfers are stripped from the data and the four data bytes are written to the Add-on to PCI FIFO.
5. The PCIO Board generates an interrupt indicating that the transfer is complete, and then deasserts REQ.
6. When the IMS software perceives the interrupt, it confirms that the number of pixels in the transfer is correct, reads the header information, and reasserts REQ to the host.
7. The host responds by sending:
   - Two control transfers
   - A line of image data.
   - A terminating control transfer.

8. The PCIO strips the control transfers from the data and generates an interrupt indicating that the transfer is complete.
9. Software confirms that the data reflects the number of pixels per line indicated by the header. If it does not, an error is declared and the acquire fails.
10. Steps 6 through 9 are repeated for each of the remaining lines in the image. (The software counts the lines.)

Parity is checked after each end of transfer interrupt (if parity is used).

6-2-2-2. Digital Output Circuit

The purpose of the output circuit is to shovel data out of the PCI to Add-on FIFO as pixels are written to it, after an SOL signal has been issued by the MCS. The data passes through the Digital I/O Controller FPGA from the PCI to Add-on FIFO. The PCIO Interface FPGA arbitrates use of the Add-on Data Bus for the passage of data. Following is a typical output sequence:

1. Reset the output interface.
2. Write the number of pixels per line into a transfer counter.
3. Configure the PCI Interface chip for bus mastership and to interrupt upon transfer count completion.
4. Issue the print command to the MCS.
5. Wait for the transfer complete interrupt from the PCI Interface chip.
6. Verify that the transfer counter reached zero, indicating that all the pixels expected to be transferred were actually transferred.

6-2-2-3. UART Circuit and Communications Interface with MCS and Serial Interface Board

One channel of the DUART on the PCIO Board is used for serial communication with either the MCS or the Serial Interface Board. The serial lines to and from the MCS connect directly with the UART in the Master CPU on the MCS Board. The lines to and from the SIB pass through differential transceivers on the PCIO Board before reaching the PCIO UART. On the PCIO side of the UART, communication is implemented on the pass-through bus of the PCI Interface Controller. Data is passed to and from the UART (on the PCIO side) as eight-bit data. When serial data is received by the UART (from either the MCS or SIB), the UART generates an interrupt that is sent to the PCIO Interface FPGA, which controls activity on the Add-on Bus of the PCIO Board. If a Foot Switch is used by the customer, it is connected to the CTS input of the UART. Each closure of the Foot Switch will also generate an interrupt.

6-2-3. Video Board

The Video Board is a high-speed monochrome frame “grabber” which can acquire images within the pixel clock range of 2.3 MHz to 140 MHz. It plugs into the PCI Motherboard Bus, and thus is on-line with the microprocessor, DIMM memory, and hard disk of the computer system (see Figure 6-6). Major attributes of the video board include:

- It accepts a variety of video inputs plus syncs, pixel clock, and video passthrough.
- 10-bit A/D conversion.
- 8 or10 bit image readout, software selectable.
- Fully programmable to allow acquisition of virtually any video signal.
- 4 megapixel image buffer memory.
- Temperature stabilization for consistent gain, offset, and delay.
- DMA bus master.

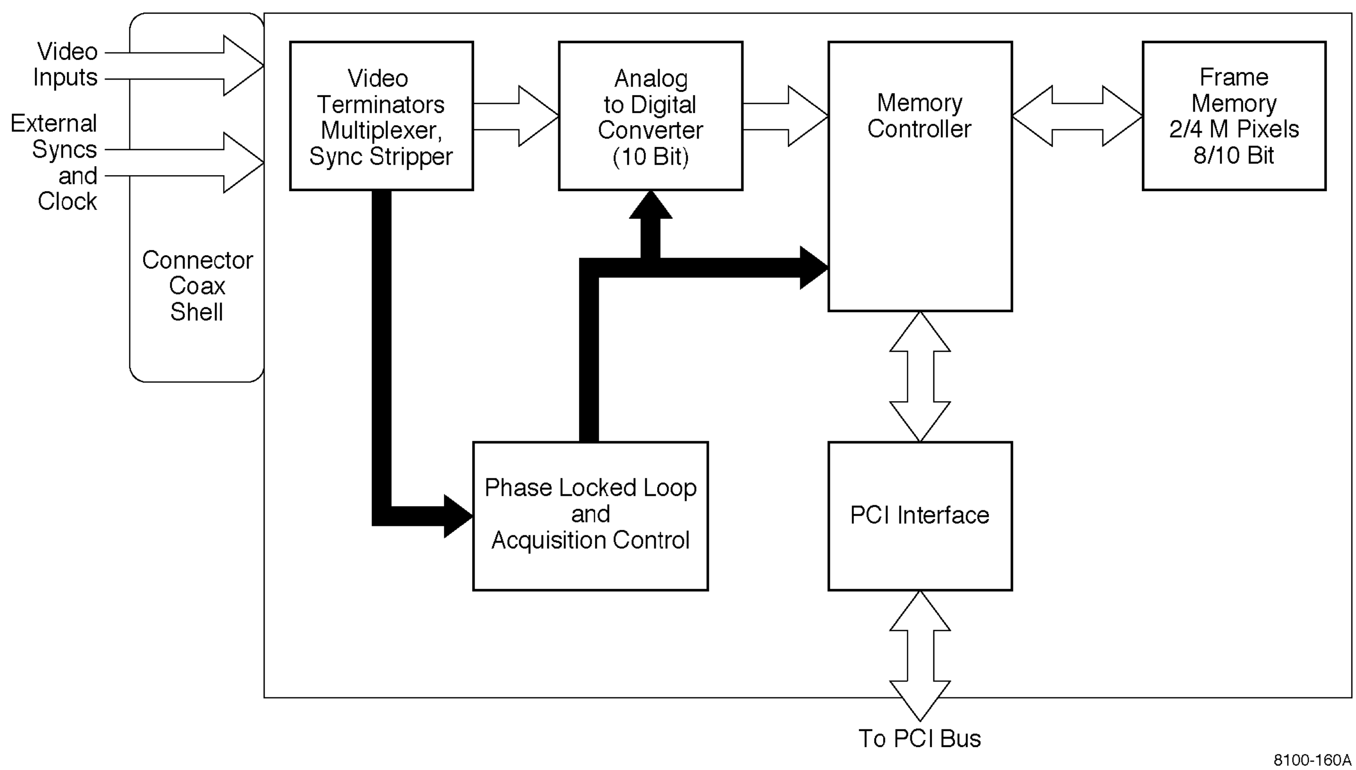


Figure 6-6. Video Board Block Diagram

6-2-3-1. Video Acquisition

The video signals from the input connector are routed to a set of jumper blocks and a pair of buffer/ multiplexers, one for video and the other for sync. The output of the video multiplexer is fed to a DC restoration amplifier, and the output of the sync multiplexer is fed to a sync separator circuit. The DC restored signal is sent through an analog multiplier for gain control and is then fed to a 10-bit A/D converter for digitization. The separated sync is sent to a sync processing circuit.

6-2-3-2. Sync Processing and A/D Sample Clock

The sync source can be selected from either the sync separator or the sync input. The horizontal sync is passed through a programmable delay line to horizontal counters and the phase-locked loop (PLL). The vertical sync is passed directly to the vertical counters.

The sample clock can come from either the PLL or an external clock input. The PLL consists of a phase detector, a loop filter, a voltage-controlled oscillator and programmable tuning circuits. The external clock can be used in either of two modes. One method is to directly clock the A/D. (This has the disadvantage of not being able to control the phasing of the clock to the data.) The second method is to use an external clock to generate a horizontal sync signal by dividing it by the horizontal total pixel count value. This sync is then fed to the sync processing section and used as the horizontal sync. The original sync is sampled by the resulting clock to recover the original sync position. This eliminates clock jitter caused by a noisy sync signal and allows the phase of the sample clock to be controlled by the sync delay.

6-2-3-3. Frame Memory

The output of the A/D converter is stored in a 4 megapixel DRAM frame buffer. The 10-bit pixels are stored as 16-bit words with the upper six bits set to 0. Pixel readout can be selected as either 8 or10 bits.

6-2-3-4. PCI Interface Controller

The PCI Interface Controller is the same as that used on the PCIO Board to transfer image data from the board to IMS main memory over the PCI bus.

6-2-3-5. Video Configuration

Video Parameters—The video board circuits have to be configured appropriately to match the characteristics of the video signal received from the modality. Video configuration is done at installation using the MPC service computer, as described in Section 2. Configuration consists essentially of entering appropriate video parameter values into the system. Refer to Section 2, Addendums A and B, for a description of this process.

Note

See also the Video Setup Help files in MPC for addtional information about video configuration.

Methods for Setting Video Parameters—As described in Addendum A to Section 2, configuration of the video board by the service technician can be accomplished in several ways:

1. Loading an Applicable CHP File. The technician uploads a CHP file that contains video parameters that apply to the type of video format received from the modality.
2. Using AutoSync. This is a software-controlled routine that actually examines an incoming video signal and calculates a set of video parameters that describes the video signal. Certain parameters, however, have to be fine-tuned by the technician using MPC.
3. Manually loading the Parameters via MPC.

6-2-4. Serial Interface Board (SIB)

The SIB is the physical interface for the serial port on the PCIO board that routes user commands to the imager. (Typically this interface would carry the 952 command set.) The **DryView** 8100 has a single serial channel for user command input. This is the UART on the PCIO Board in the IMS. The SIB accepts any of the following user sources and routes it to the UART:

- Host control via RS422.
- Host control via RS232.
- Keypad control via the Kodak **DryView** V2 Keypad.
- Keypad control via the Kodak **DryView** 8100 keypad.
- Host control translation via an HPT keypad.

The SIB can operate in either of two modes, which are selected via a Mode Switch on the board:

- Normal Mode—This mode is used when host commands do not need to be translated into the imager command set.
- Translation mode—This mode is used with HPT keypads, which translate a host command set into a command set that can be used by the imager.

6-2-4-1. Foot Switch

An external foot switch with a BNC connector can be attached to the SIB. When the foot switch closes, the CTS line of the UART on the PCIO Board is brought low. The UART can be programmed to generate an interrupt when this occurs. (Typically the interrupt would be used to initiate acquisition of an image.)

6-2-4-2. LED Service Feature

LEDs on the SIB indicate communication functions as shown in Table 6-1.

Table 6-1. LED Functions

LED	Labeling	Function
LED3	From IMS	Flashes when IMS sends data.
LED1	To HPT	Flashes when HPT keypad sends data to host in translation mode.
LED2	From HPT	Flashes when data arrives from host in translation mode.
LED4	From Host 232	Flashes when data arrives from an RS232 host.
LED5	From Host 422	Flashes when data arrives from either an DryView 8100 keypad or an RS422 host.
LED6	From Keypad 422	Flashes when data arrives from the Kodak Version 2 Keypad.

6-3. The Machine Control System (MCS)

The MCS controls the operations involved in handling film and exposing, processing, and controlling quality of the image on the film. The MCS includes the following major components:

- MCS Board—This board contains the Master CPU and auxiliary circuits that control operation of all MCS components. It communicates with slave micro subsystems located on several peripheral boards that are part of the MCS. (These boards are described below.) Other functions of the MCS Board are as follows:
  a. It receives the digital image data from the Image Management System (IMS), passes it through AIQC circuits, and converts it to an analog signal which drives the laser diode.
  b. It receives power from a DC Power Supply and distributes it to the components of the laser imager.
  c. It interfaces with system interlocks and a service switch that are available to control power in potentially hazardous situations.
  d. It contains circuits that directly drive several dc and stepper motors, and receive inputs from several sensors (see sheet 2 of the system functional diagram in Section 9).

Note

The MCS micro slave/master system is described in paragraph 6-3-1, and functions of the MCS Board are described in more detail in paragraph 6-3-2.

- Laser Optics Subsystem and Optics Module Control Board—The laser optics control scanning and exposure of the film. The Optics Module Control Board contains a slave micro system that controls the Optics Spinner Motor and Attenuator Motor, and receives sense inputs from the Attenuator Home Sensor and Shaft Index Sensor. This board also houses the laser SOS (Start of Scan) Detector that synchronizes image scanning, and the Laser Beam Power Monitor. Laser power ($\pm$ 12 vdc) and the image drive signals (analog) are routed from the MCS Board through this board to the laser. (See paragraph 6-3-3.)
- Densitometer Board—Contains a slave micro, A/D converter and PAL that measure film density and report it to the Master CPU. Two density measurements are made during normal imager operation: (1) The Dpatch on the trailing edge of each sheet of film is checked and (2), Step wedges are measured on test calibration film. (See paragraph 6-3-4.)
- Barcode Reader Board—Contains a slave micro system that controls reading and reporting of the barcode data on the film cartridge label. The board houses detectors that read the barcode data. The read data is converted to digital format for input to the slave micro, which sends the information serially to the MCS Master CPU. (See paragraph 6-3-5.)
- Feeder Board—Contains a slave micro system that, under control of the MCS Master CPU, drives the film handling motors and receives status from various film sensors. (See paragraph 6-3-6.)
- Local Panel—The Local Panel provides for operator interface with the laser imager. It includes a slave micro that interfaces a 2 by 20 character LCD display and a membrane switch matrix with the MCS Master CPU. (See paragraph 6-3-7.)
- Processor Interface Board—This board contains relays that route 120 vac power to the Processor heater under control of the MCS Board. (See paragraph 6-3-8.)

6-3-1. Master/Slave Micro System

6-3-1-1. Serial Communication Protocol

The MCS uses MicroComm Serial Communication Protocol to allow the Master CPU on the MCS Board to communicate with distributed micros on a simple, low-cost serial interface. Slave micros are included on the following circuit boards:

1. Optics Module Control Board (Slave 1)
2. Densitometer Board (Slave 2)
3. Barcode Reader Board (Slave 3)
4. Feeder Control Board (Slave 4)
5. Local Panel Board (Slave 5)

6-3-1-2. Physical Interface

The physical interface includes only a TXD (transmit) line, an RXD (receive) line and a Reset line (see Figure 6-7). In this configuration the RXD lines of all slaves are tied together and connected to the TXD line of the Master CPU, and the slave TXD lines are tied together and connected to the RXD line of the Master CPU.

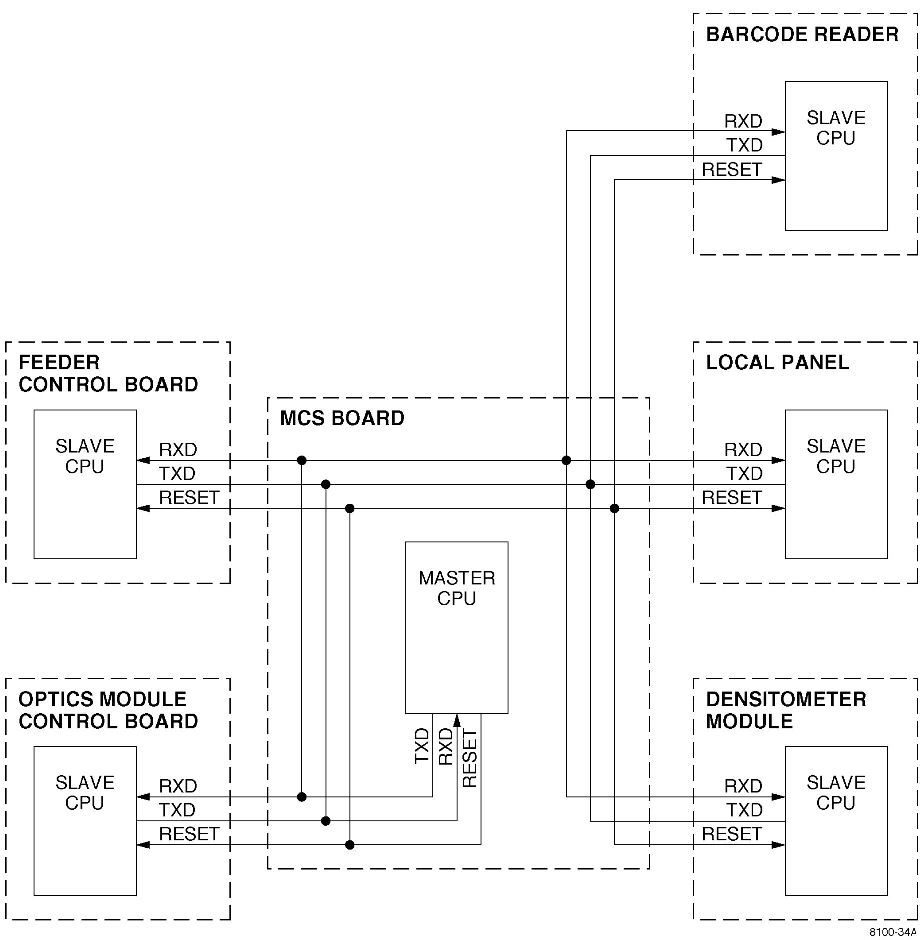


Figure 6-7. Master/Slave Physical Interface

6-3-2. MCS Board

The MCS Board contains the Master CPU and auxiliary circuits that control the electromechanical components of the laser imager. (Refer to sheet 2 of the functional diagrams in Section 9.) It also provides a pixel data path from the IMS to the laser and includes a Media Lookup Table (LUT) and associated AIQC circuits. Direct control functions of the MCS Board include the following:

1. Interprets and controls serial communications.
2. Controls machine subsystems and Local Panel messages through the MicroComm interface.
3. Controls the following devices which are not on the MicroComm bus:
   - Processor Drum Motor (speed)
   - Processor Drum (temperature)
   - Optics Translation Motor (speed and direction)
   - Platen Feed Motor
   - Platen Centering Motor
   - Front Door Solenoid
   - Safety interlocks
4. Reads the state of the Optics Home Sensor, Platen Film Sensor and Transport Sensor

6-3-2-1. Master CPU

The Master CPU has general control of all MCS functions. The main resident serial port on the CPU chip is programmed to talk to five slave units on the 9–bit MicroComm Interface, as described in paragraph 6-3-1. A special feature of the CPU allows the creation of UARTs (Universal Asynchronous Receiver/Transmitters) on its TPU (Time Processing Unit) channels. The integral UARTs allow the CPU to communicate directly with peripherals, saving the expense of an external UART chip. The current configuration of the MCS employs only one TPU UART, which is used to communicate with the IMS.

The CPU works with an Address Decoder FPGA to route Chip Select, control, and addressing signals to other components on the MCS Board. This FPGA extends the CPU's ability to address and control the other components of the MCS.

CPU I/O Port Functions—CPU input and output port functions are defined as follows:

CPU Inputs:

- Optics Home Sensor—Low when optics is in (or past) the home position.
- Platen Sensor—High when film is actuating the sensor.
- Transport Sensor—High when film is actuating the sensor.
- Processor Temp Frequency In—This is a frequency input that is proportional to the processor temperature. It is used to monitor temperature.

CPU Outputs:

- Platen On—When low, enables operation of the Platen Nip Stepper Motor.
- Platen Phase 1 and Phase 2—These two channels control direction of the Platen Nip Motor by generating two square waves that are 90 degrees out of phase. Direction depends on which signal leads the other. If Phase 1 leads, the motor turns in the load direction. If Phase 2 leads, the direction is opposite (unload).
- Centering On—When low, turns on the Centering Stepper Motor.

- Centering Phase 1 and Phase 2—These two channels control direction of the Centering Motor by generating two square waves that are 90 degrees out of phase. If Phase 1 leads, the motor operates in the home direction. If phase 2 leads, it operates in the centering direction.
- Processor Heater Control—Controls the duty cycle of the Processor Heater.
- Translate Clock—This is a pulse width modulated signal that controls the stepping rate of the Optics Translation Stepper Motor.
- Processor Clock—This is a pulse width modulated signal that controls the stepping rate of the Processor Stepper Motor.

6-3-2-2. Film Processor Control

The MCS Master CPU and Address Decoder FPGA control the temperature of the Processor heater as follows. A 1,000 ohm RTD is used to sense heater temperature. The RTD output is converted to a frequency modulated signal on the MCS board. This signal, PROC TEMP FREQUENCY IN, is sent to the CPU, where the proper duty cycle for the application of 120 vac heater power is determined. The CPU sends a PROC HEATER CONTROL signal to the Address Decoder FPGA, which generates the PROC SSR DRIVE signal. This pulse-width modulated signal (low-going active) energizes the solid state relay on the Processor Interface Board that routes ac power to the heater.

6-3-2-3. Stepper Motor Drive

Two types of drive circuits are used on the MCS to operate the four stepper motors that are directly controlled by the MCS Board:

Film Centering Stepper and Platen Roller Stepper—Drivers for these motors require an enable signal and two phase signals (square waves) spaced 90 degrees apart. The phase signals determine the direction of current through the motors as shown in Table 6-2.

Table 6-2. Stepper Motor Phase/Direction Relationship

Stepper Motor Driver	Leading Phase	Motor Direction
Platen Roller Stepper Motor	Phase 1	Load Direction
	Phase 2	Unload Direction
Film Centering Stepper Motor	Phase 1	Home Direction
	Phase 2	Centering Direction

To start a motor, the CPU configures the phasing channels for the appropriate direction and sends the required enabling signal, PLATEN ON or CENTERING ON (active low). To stop the motor, the enabling signal is driven high. It is not necessary to stop the phasing signals to stop the motor. The Film Centering Stepper Motor is driven at 12 volts dc. The Platen Roller Stepper uses 24 volts dc because it requires high rotational speed and needs higher power to overcome motor winding inductance.

Optics Translation Stepper and Processor Stepper—The drivers for these two motors have microcontrollers that include micro-stepping data tables. The optics translation stepper micro receives input control signals for on/off, direction, and fast or slow speed, as well as clock pulses (TRANSLATE CLK). The processor stepper micro has only an on/off control signal, in addition to its clock input ((PROCESS CLK), since it has only a single direction and speed. Each clock pulse from the CPU to a micro results in one micro step. The two micros have different code sets for controlling motor speed:

- In the optics translation code set, there are 16 microsteps per one major step at scanning speed (slow). This corresponds to 3200 microsteps per revolution on a 200 steps per revolution motor. Running at high speed there are approximately 12 microsteps per major step.
- In the processor driver code set, there are 32 microsteps per major step, corresponding to 6400 microsteps per revolution on a 200 step per revolution motor.

6-3-2-4. Media Lookup Table (LUT)

All pixel data passes through this LUT, including the SOS level value from the Pixel Control Register that is applied to the laser during the part of scan rotation just before the laser beam crosses over the SOS Detector. The LUT values that are calculated by the Gray Scale Manager software follow the video level conventions established for earlier laser systems: a digital value of 0 produces a black spot on the film (high laser power). To produce clear areas on the film, large digital values must be presented to the DAC by the LUT, since data inversion occurs at the DAC. The data sense through the system is 0 = black = high laser power.

The data from the LUT is fed to a DAC that converts the 16-bit data to analog to drive the laser diode.

6-3-2-5. Laser Scanning Characteristics

Before describing the circuits on the MCS Board that transfer the image pixels to the laser assembly for printing, it is necessary to briefly consider certain characteristics of the scanning process:

Double Scanning—The laser scanner uses a polygon mirror with two facets. During exposure, each revolution of the polygon causes both Facet 0 and Facet 1 to deflect the laser beam onto the film plane. The **DryView** 8100 exposure engine uses double scanning. Identical pixel data is scanned onto the film from both Facets 0 and 1. Each revolution of the polygon includes four phases:

1. The laser beam reflects off mirror Facet 0 and onto the film surface.
2. The laser beam (if allowed) reflects off the end of the mirror as it turns, scattering light. (As explained int he next paragraph, the potential scattering of light must be cancelled out to avoid generation of image artifacts or increased DMin.)
3. The laser beam reflects off mirror Facet 1 and onto the film surface.
4. The laser beam, if allowed, reflects off the other end of the mirror, scattering light.

Laser Dead Time—Laser dead time is the period when the laser is turned off to avoid the scattering of light off the mirror ends described in the preceding paragraph (phases 2 and 4). The laser is turned back on before the next polygon facet causes the laser beam to cross the SOS detector on the Optics Module Control Board. The length of the dead time is controlled by the Pixel Clock Generator FPGA on the MCS Board. The LASER OFF line from the Pixel Clock Generator turns off the drive circuit from the DAC to the laser for a period determined by a CPU-controlled register in the Pixel Clock Generator.

Pixel Stretch Correction—The two-sided mirror rotates on a motor shaft. If the motor shaft is precisely the same distance from both mirror surfaces, the linear velocity of beams deflected from each mirror will be identical. Since it is impossible to achieve identical distances for the two mirror facets, the laser beams will move at slightly different velocities and, unless corrected, the scan lines from one facet will be longer or shorter than those from the other. The solution to this problem is to stretch one of the lines to make it longer. The line is stretched by occasionally stretching a pixel so that the resulting line is equal in length to the line from the other facet. This stretch parameter is measured during optics manufacturing and stored in the Optics Control Board EEPROM.

6-3-2-6. General Pixel Flow Control Functions

The Pixel Clock Generator and FIFO FPGAs on the MCS Board work together to control the flow of image data from the host to the laser for printing. They perform the following functions, without intervention by the CPU:

1. Synchronize pixel generation with the SOS detector in the Optics Module.
2. Position the image in the vertical direction on the film, under CPU control.
3. Adjust for the nonsymmetric axis of the Spinner Motor mount by varying the length of some pixels on one of the two optics mirror facets. (See **Pixel Stretch Correction** on preceding page.)
4. Turn the laser off during part of each rotation to prevent light scattering as the end of the mirror rotates through the beam axis. (See **Laser Dead Time** on preceding page.)
5. Present the same data for scanning by both optics mirror facets consecutively.
6. Send SOL (Start of Line) signals to the IMS.
7. Accept image data from the IMS in high speed bursts of up to 5 Mpixels per second.
8. Allow simultaneous output of pixel data during these high speed bursts.
9. Do parity checking of the pixel data and generate clearly visible artifacts if an error is detected.
10. Count clocks received from the IMS and written to the page. If the counts do not match the programmed numbers, generate an error detectable by the CPU.
11. Generate a dc SOS (Start of Scan) detection level (settable by the CPU) to trigger the SOS detector for the portion of the scan rotation where the laser beam crosses the SOS detector.
12. Allow access to the Media LUT by the CPU.

6-3-3. Laser Optics Subsystem

6-3-3-1. General

The **DryView** 8100 laser optics subsystem includes the following major components:

- A cylindrical platen, on which the film is held motionless during image scanning.
- An optics module, which delivers a scanning laser beam across the surface of the film.
- An optics translation assembly, which translates the laser beam perpendicularly to move down the film, scan line by scan line.

A simplified schematic diagram of the optics is shown in Figure 6-8. The optics module contains a 50 mW solid state laser diode with an emission wavelength of 810 nm. These specifications match the spectral sensitivity of the **DryView** film used in the **DryView** 8100. The laser beam is modulated by varying its drive current. The laser beam is shaped by collimation and by passing it through a set of three lenses (not shown in diagram) to focus the beam at the film plane. The laser path also contains a beam power attenuator, which controls maximum exposure on the film surface. Basic scanning specifications are as follows:

- Pixel matrix: 4620 by 5596
- Spatial resolution: 12.8 lines per mm
- Laser spot size: 40 um by 60 um
- Power at film: 23.4 mW maximum
- Exposure time 35 seconds

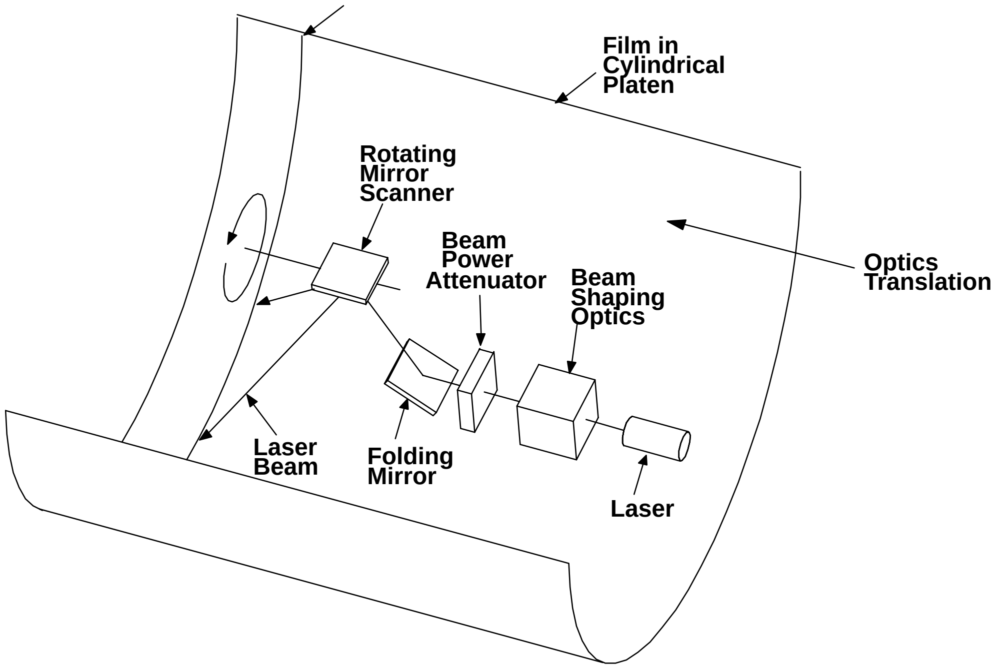


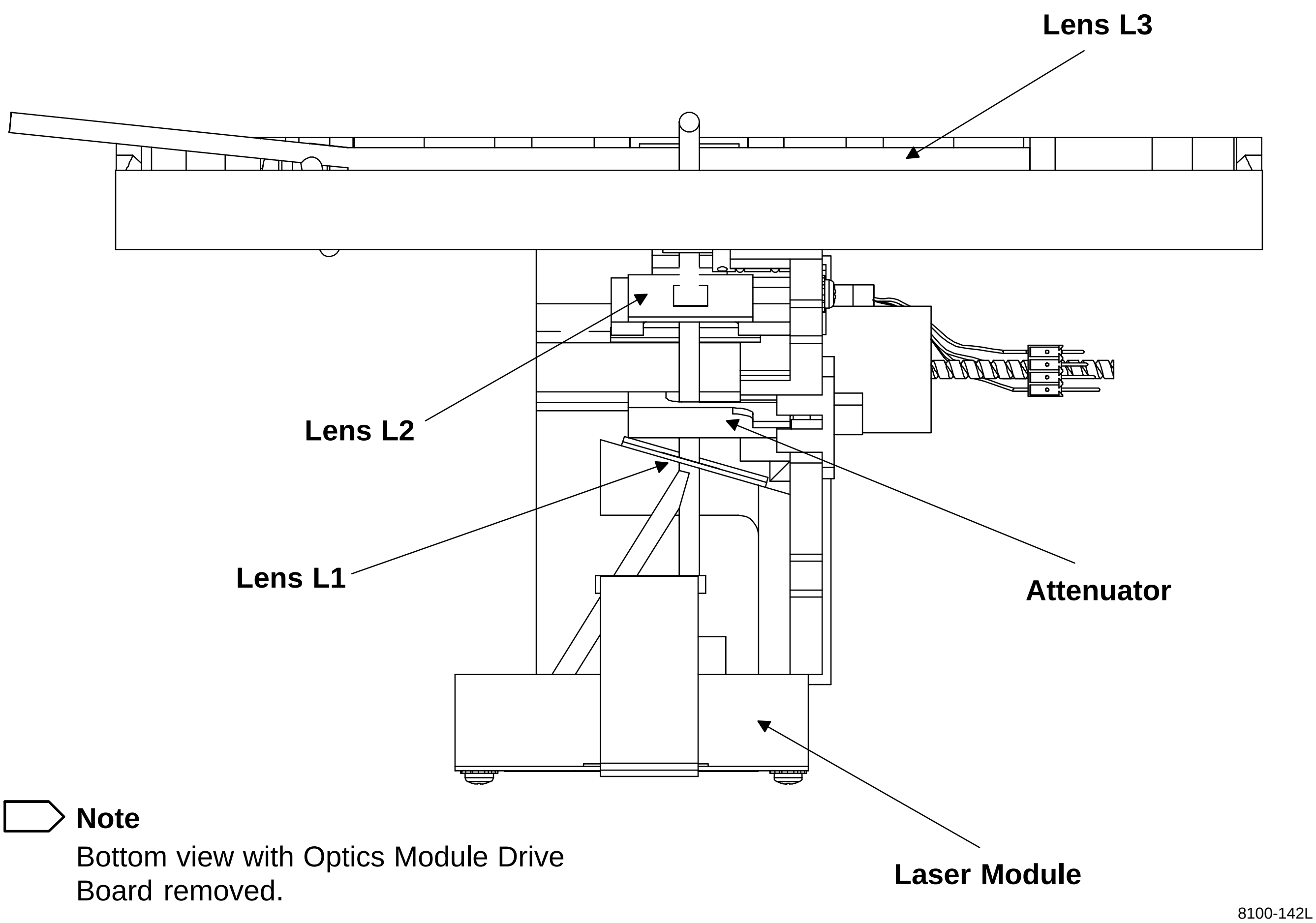
Figure 6-8. Laser Optics – Schematic

6-3-3-2. Film Platen

The **DryView** 8100 optics system is an internal drum scanning system, which focuses a scanning laser beam onto the internal surface of a semi-cylindrical drum. Film is held stationary in the platen during imaging. The scanning angle for film in the platen is 180 degrees, covering a nominal distance of 17 inches for line scanning. The optics module is “translated” down the page while scanning occurs, to image the complete page. The nominal travel distance of the optics module at specified translation speed is 14 inches. This method of scanning generates an image on 14 by 17 inch film with the scan line in the vertical (17 inch) direction, as opposed to the typical horizontal direction.

6-3-3-3. Optics Module

Functions of the optics module are described in the following paragraphs. Locations of the optics lenses are shown in Figure 6-9.



Note
Bottom view with Optics Module Drive Board removed.

Figure 6-9. Laser Module – Positions of Lenses and Attenuator

Scanner—The scanner is a two-sided mirror mounted on an adapter that is installed on the shaft of a dc brushless motor (Spinner Motor DCM3). As the motor rotates, the laser beam is reflected downward radially in an approximately conical shape. Flexible lens L3 is placed at half distance between the scanner mirror and the film platen surface. In the **DryView** 8100 application, an image line is scanned twice with the same data, once by each of the two sides of the mirror during a single rotation of the motor shaft. Double scanning improves image sharpness, and makes scanning lines invisible under normal viewing conditions.

The two-side mirror is mounted so precisely on the adapter and motor shaft that the discrepancy in the pointing angle between the two mirrors is insignificantly small.

Pixel Stretch—Despite precise mounting of the two–sided mirror, some radial centering offset of the mirror can occur. This results in a slight difference of velocity between the two mirrors. If a constant pixel clock is used for placing pixels on the film, the scan line length will vary for the two mirrors. To avoid this problem, a variable pixel clock is implemented. For the mirror side that has a lower scanning speed, an extra clock is inserted periodically to lengthen pixel exposure time. This process is called “pixel stretching.”

Scanner Speed Sensing and Control—The Shaft Index optical sensor, triggered by a shiny area on the adapter that secures the two–sided mirror to the Spinner motor shaft, provides a shaft speed indication to the MCS. At the same time it indicates which mirror is currently scanning. When the speed sense pulse is detected, Mirror 1 is currently scanning.

Scanner speed is controlled by a digital feedback loop on the Optics Module Control Board (OMCB). The time interval between two adjacent scanner speed pulses is measured by a counter using a 16 MHz clock. An error signal determined by the timing measurement is calculated by the microprocessor on the OMBC and sent to the DAC, which feeds a correction voltage to the Spinner Motor.

S**tart of Scan Sensing and Beam Power Monitoring**— Start of Scan Detector PD1 on the OMCB serves as both SOS detector and laser beam power monitor. The laser is turned off after completion of a scan line, to avoid light scattering. Turn on of the beam is timed so that it will reflect onto PD1 at the beginning of scan, generating the SOS pulse. This pulse is fed back to the MCS Board Pixel Clock Generator to synchronize startup of the pixel clock.

To measure laser power, the laser is turned on constantly at a set driver level, and PD1 performs peak detection for a number of scans. The power value is measured by an A/D Converter to provide a laser power reading.

Laser Driver—The laser driver, housed in the box which contains the laser diode, provides current to run the laser. The current level is determined by the voltage present at the driver input. A feedback loop is formed by reflection of the beam from lens L1 to a photodiode, which feeds a circuit that generates an error signal for feedback control of the driver.

Beam Attenuator—A linearly variable neutral density filter is used to attenuate beam power to accommodate for variations in film speed. Use of the attenuator allows the laser drive current levels to remain independent of film speed variations.

6-3-3-4. Optics Translation Assembly

The optics translation assembly (see Figure 6-10) moves the optics module in the cross-scan direction during exposure. Speed and smoothness of motion must be precisely controlled. Speed variation during translation will result in vertical bands or streaks of nonuniform density on the film image. Also, unstable motion during translation can cause inaccurate placement of pixels, resulting in a variety of image artifacts.

Translation Carriage—The optics module is mounted on a translation carriage that slides on a pair of cylindrical rails during translation. Kinematic support is achieved by a pair of V-shaped bearing surfaces and a flat sliding surface built into the carriage. When the carriage slides on the rails, there is little friction on the carriage in the translation direction, while its position is rigidly determined in the other directions. The cylindrical rails are precision ground to reduce friction. Any marks or scratches on the rails can result in nonuniformity in translation speed.

Drive Mechanism—The carriage is driven by a nylon-coated steel cable mounted on two pulleys: a drive pulley and an idler. The drive pulley is mounted on and coaxial with a circular flywheel. The flywheel is friction-driven by a polyurethane tire mounted on the shaft of Optics Translation Motor (STEP 4).

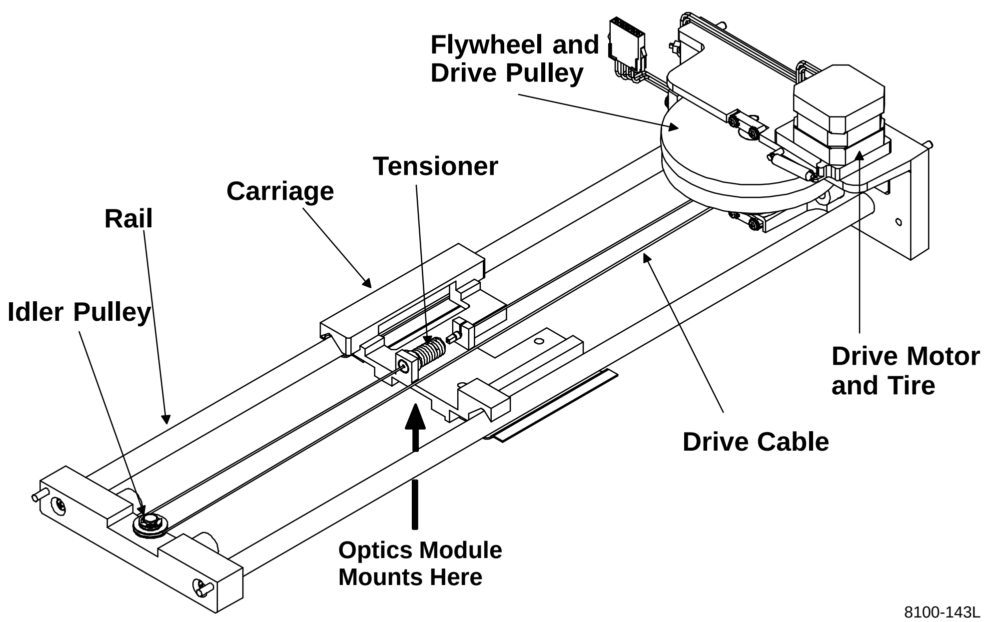


Figure 6-10. Optics Translation Module

6-3-3-5. Optics Module Control Board

This board, located in the laser enclosure, routes the analog drive signal and ± 9 volts dc from the MCS Board to the drive circuits that operate the laser diode (see Sheet 2 of the system diagrams in Section 9). In addition, it contains a slave micro and auxiliary circuits that control the Optics Spinner Motor and Attenuator Motor, and report status to the Master CPU on the MCS Board. It also houses the SOS Detector and Beam Power Monitor circuits.

Parameter EEPROM—The EEPROM for the Slave Micro contains the following information, which is loaded during manufacturing:

- Serial number for the Optics Module, which can be in the range from 0 to 65535.
- Start of Scan (SOS) Delay Time, which can be in the range of 0 to 255 pixels.
- Identification of the polygon mirror facet (0 or 1) to which the pixel stretch value must be applied.
- The value for pixel stretch, in the range of 1500 to 61556.

Spinner Motor Control—The Spinner Motor scans the laser across the film, as it is reflected successively from the two mirror facets in the double scan process. Turn on and speed of the motor are controlled by the slave micro on the Optics Module Control Board. The speed control signal (SERIAL CLK) from the slave micro is fed to a DAC. The analog output of the DAC is amplified and used as a drive signal for the Spinner Motor.

SOS Detector—During each revolution of the scanner, a photodetector on the Optics Module Control Board is activated by the laser beam reflecting off a spot on the scanner adjacent to mirror Facet 0. Thus Facet 0 is used as the reference for Start of Scan. The SOS signal from the detector, shaped and amplified, is sent to the Pixel Clock Generator on the MCS Board to be used as a timing reference (SOS RAW) for pixel flow control. The detected SOS signal is also used by the Beam Power Monitor on the Optics Module Control Board, as described in the next paragraph.

Beam Power Monitor—The Beam Power Monitor consists of an amplifier and a peak detector that monitor the SOS photodetector. The beam power indication from the peak detector is fed to an AD Converter. The digitized beam power signal is then passed to the slave micro so the information can be used to control attenuation of the laser beam to achieve the desired beam strength during optics calibration.

Optics Module Control Functions—The MCS software implements the following commands to control the optics module:

Reset Optics Electronics Module—This command reinitializes the optics electronics and performs power up tests.

Turn Spinner Motor On—This command turns on the Spinner Motor and controls the rate of rotation precisely.

Turn Spinner Motor Off—This command turns off the Spinner Motor.

Set Attenuator Position—This command moves the attenuator to the position indicated by the position parameter (a value between 0 and 650).

Display Attenuator Position—This command returns a value (between 0 and 650) indicating the position of the attenuator.

Measure Beam Power—This command instructs the optics electronics to activate and reset the beam power monitor, and to turn on the laser long enough for it to spin the laser beam onto the Start of Scan Detector at least three times before reading beam power from the A/D Converter.

Report Beam Power—This command instructs the Optics Module Slave Micro to return measured beam power to the MCS CPU.

Turn Laser On—This command instructs the Optics Module Slave Micro to enable the laser.

Turn Laser Off—This command instructs the Optics Module Slave Micro to disable the laser.

Execute Diagnostics—This command instructs the optics to home the attenuator.

6-3-4. Densitometer Module

The purpose of the Densitometer Module is to read and report film density values from:

- Each step wedge in a calibration film.
- The DPatch on every sheet of film.

The Densitometer Module includes the following components:

- Densitometer/Exit Sensor—This sensor is used to detect the leading and trailing edges of the film to control the timing of density readings. It is used also to detect film jams at the exit of the film processor. The sensor is located about 1 inch ahead of the densitometer emitter and detector in the film path.
- Light Source—This is an LED circuit that is positioned on the opposite side of the film path from a detector on the Densitometer Board. The light from the LED, passing through the film, is detected to provide an indication of the relative density of the image on the film. The LED is turned on, when required, by the Slave Micro on the Densitometer Board.
- Densitometer Board—This board contains a Slave Micro that communicates with the Master Micro on the MCS Board to control density measurement and reporting. In addition to the Slave Micro, it contains a photodetector that reads the light passing through the film, an A/D Converter that converts the analog signal from the detector to digital data, and a PAL that performs timing and logic functions.

6-3-4-1. Step Wedge Calibration

To perform a test calibration, the imager prints a test film that has 26 stripes (or steps) of increasing optical density (see Figure 6-11). The densitometer measures the density of each step and uses the data as feedback to the AIQC system to create a Film Model (see paragraph 6-3-4-3). Each gray step is preceded by a fiducial consisting of a thin dark stripe followed by a thin light stripe. These are used to locate the start of the next gray step.

6-3-4-2. Reading the DPatch

The DPatch is an area on every sheet of film that is exposed and processed to provide a reference for quality control of optical density. It is located near the trailing edge of the film, in the center of the notched edge. The density of the DPatch is measured to provide feedback to the AIQC system. AIQC then adjusts the optics attenuator as necessary to control the intensity of the laser beam to achieve the target density.

6-3-4-3. Using Test Calibration Data to Create the Film Model

Once a successful calibration is achieved, the AIQC system and GSM use the data to create a Film Model and Media Lookup Table, which tell the optics module how much laser attenuation is required to achieve the desired exposure intensity. The data used is a DLogE curve generated by the density values measured over the 26 steps of the gray scale step wedge. A sample DLogE curve is shown in Figure 6-12.

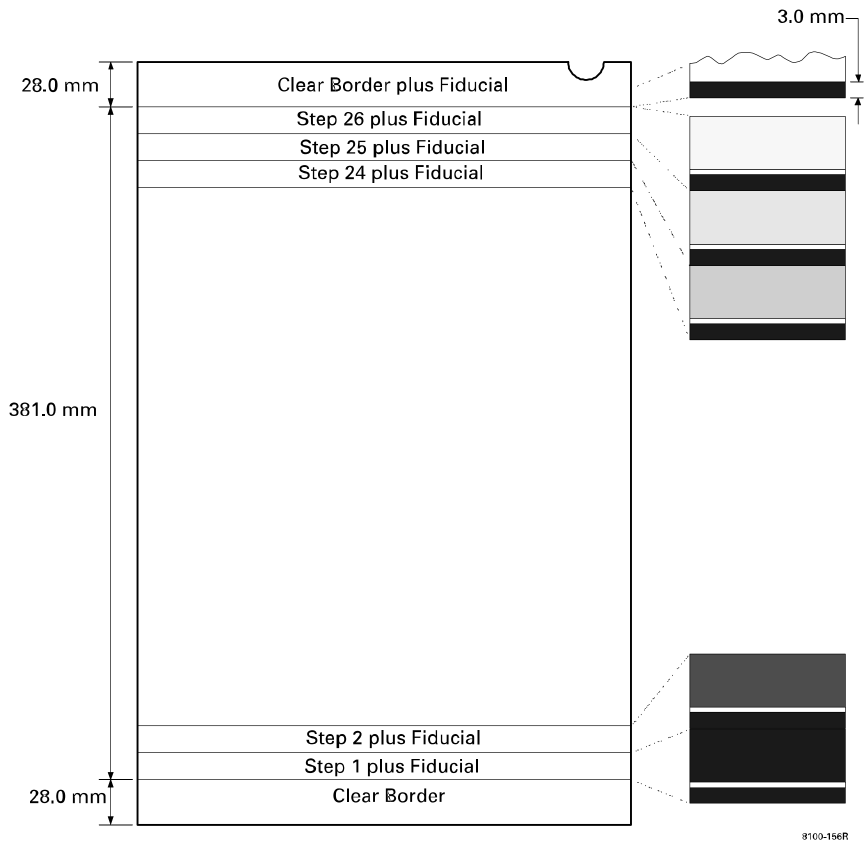


Figure 6-11. Calibration Sheet

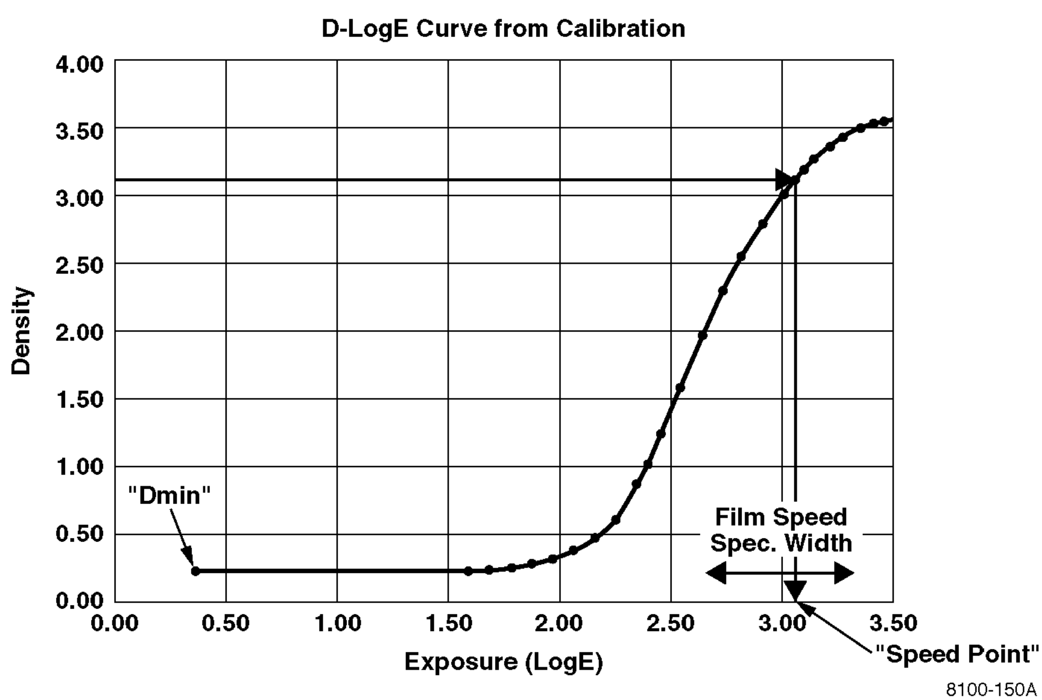


Figure 6-12. Sample Calibration DLogE Curve

6-3-4-4. Densitometer Control Functions

The MCS software that controls densitometer functions implements the following commands:

Reset Densitometer Module—This command reinitializes the A/D converter and resets its counters and flags.

Arm for DPatch—This command:

- Monitors the Exit Sensor to detect the leading and trailing edges of the film.
- Calculates the average density from the raw readings and reports the results to MPC and Gray Scale Manager (GSM) logs.

Report DPatch Value—This command reports the calculated average density value.

Arm for Step Wedge—This command:

- Monitors the Exit Sensor to detect the leading and trailing edges of the film.
- Calculates the average density from the raw readings.

Report Step Wedge Value—This command reports the calculated average density of the step.

Execute Diagnostics—This command:

- Reads the densitometer with the light source off and sets the dark offset to the raw value.
- Reads the densitometer with the light source on and sets the light offset.
- Compares the dark and light offsets. If the difference between the two values is insufficient, sets the Densitometer Failure Error bit.
- Reads the Exit Sensor every 3 seconds and reports status.

Read Raw Densitometer Value—This command reads the current raw value form the A/D Converter every 16 ms and reports status on request.

Turn Light Source On—Turns the light source on.

Turn Light Source Off—Turns the light source off.

6-3-5. Barcode Reader Board

The Barcode Reader Board reads the barcode data from the film cartridge and reports it to the MCS. The board contains emitters and detectors for each of the four tracks in the barcode. It also contains an A/D Converter that digitizes the analog data from the detectors, and a Slave CPU that controls the collection of the barcode data and communicates with the Master CPU on the MCS Board.

6-3-6. Feeder Control Board

The Feeder Control Board is responsible for extracting film from the film cartridge and feeding it to the platen. The board contains, in addition to a slave CPU, drive circuits for three dc motors and two stepper motors. The Slave CPU receives inputs from eight optical sensors that provide position information relating to mechanical components that handle film. Timing for all feeder control functions is controlled by the Slave CPU.

6-3-6-1. Motor Control

The Feeder Control Board controls the following five motors:

- The Elevator (Stepper) motor, which raises and lowers the film cartridge in the rollback tray.
- The Rollback (DC) Motor, which rolls the cartridge lid open or closed.
- The Pickup (DC) Motor, which moves the pickup cups up and down.
- The Feed Roller Open (DC) Motor, which opens and closes the film feed rollers to capture the film positioned by the pickup cups.
- The Feed Roller (Stepper) Motor, which drives the film from the cartridge to the platen rollers.

DC Motor Drive—The three identical bidirectional dc motors operate on +12 volts dc. The drivers for the motors do not provide current limiting. When the motors are turned on, they are essentially placed across the +12 volt dc supply. The only control applied to the motors, aside from turning them off and on, is in the direction of current flow through the motor windings. Each motor driver has two control lines coming to it from the Slave CPU. When these lines are at opposite digital levels, the motor is energized. When the lines are at the same level, the motor is off. The polarity of the signals applied to the two control lines determines the direction of travel.

Stepper Motor Drive—The drive circuits for the two stepper motors are identical to the stepper drive circuits on the MCS Board for the Film Centering and Platen Motor Stepper Motors. Each driver requires from the CPU an enable signal and two phase signals (square waves) spaced 90 degrees apart. The lead/lag relationship of the phase signals determines the direction of current flow through the motor windings and thus the direction of motor rotation. To start a motor the Slave CPU configures the phasing channels for the appropriate direction and sends the required enabling signal, NIP PHASE ON or ELEVATOR PHASE ON (active low). To stop the motor, the enabling signal is driven high. It is not necessary to stop the phasing signals to stop the motor. The Elevator Stepper Motor is driven at +12 volts dc, and the Feed Roller Stepper is driven at +24 volts dc.

6-3-6-2. Sensor Control

The Feeder Control Board receives status from the following eight sensors:

- Pickup Position Sensor, which indicates that the pickup arm is in its home (top) position.
- Film Surface Sensor, which signals that the pickup arm has moved to the position where the sensor contacts the film surface.
- Film Out Sensor, which indicates (after the pickup arm has moved down) whether the cartridge is out of film.

- Cups Engaged Sensor, which indicates that the suction cups have rotated down to engage the film.
- Feed Roller Open Sensor, which indicates whether the feed rollers are open or closed.
- Cartridge Present Sensor, which indicates that a film cartridge is loaded.
- Rollback Home Sensor, which indicates that the film cartridge is closed.
- Elevator Home Sensor, which indicates that the elevator is in the home (lowered) position.

All eight sensors are identical electronically and have the same pinout configuration. Since the sensors are the infrared type, and thus have the potential of exposing film, the Slave CPU switches them off and on as needed by means of the SENSOR CONTROL line. When this line is low, the sensors are off. To read sensor status, the CPU sets the line high, providing a ground for the sensor circuits through Q1. All the sensors operate with the same “sense”: When a sensor is blocked (i.e., no light is reaching the detector side), the output of the sensor is a logic 0 (low).

As shown on sheet 2 of the functional diagrams in Section 9, the Feeder Control Board contains two jumper plugs for use by a service technician. The jumper on plug JP3 will provide a “full time” ground for the sensor circuits if placed in the SENSORS ON position (bypassing CPU control). Also, the jumper on plug JP2 can be used to activate the eight LEDs on the board for troubleshooting purposes. Each sensor input line to the CPU includes an LED. When a particular sensor is blocked (not conducting), its corresponding LED will turn on if jumper JP3 is in the SENSORS ON position.

Note

Following service use, the jumpers must be removed from the service position and stored in the “normal” position on the jumper plugs, for normal machine operation.

6-3-6-3. Film Pickup and Feed Functions

The MCS software that controls film pickup and feed through the MicroComm interface implements the following commands:

Start Pickup—This command initiates the following sequence:

1. Check the following items before moving the pickup arm:
   - The pickup arm is home (Pickup Position Sensor).
   - Pickup and feed diagnostics have passed.
   - No other operations are in process.
   - A film cartridge is present (Cartridge Present Sensor)
   - The cartridge has been rolled back (Rollback Home Sensor).
   - The cartridge elevator is lowered (Elevator Home Sensor).
2. Lower the pickup arm until it contacts the film (Film Surface Sensor).
3. Determine whether film is present in the cartridge (Film Out Sensor). If it is not: recheck twice to confirm, then return the pickup arm home and report the error.

Note

If an error occurs at any point during the pickup sequence, the pickup arm is stopped and returned home. Then the error is reported to the MCS.

4. If film is present, continue moving the pickup arm until the pickup suction cups contact the film (Cups Engaged Sensor). Then apply suction cup vacuum.

5. Reverse pickup arm direction and move the pickup arm to the film separation tabs position (timed function).
6. Pause 1 second. Then pat down the film by lowering the pickup arm to the film surface. After patdown, return the pickup arm to the separation tabs position and pause for 1 second.
7. Move the pickup arm up to the feed nip roller position (Pickup Position Sensor) and stop.
8. Close the feed nip rollers onto the film.
9. Release the suction cup vacuum and return the pickup arm to the home position (Pickup Position Sensor).
10. Report to the MCS that film is ready to feed.

Stop Pickup—This command stops the PIckup Motor and reports status to the MCS.

Start Feed—This command starts the Feed Roller Motor and reports status to the MCS.

Stop Feed—This command stops the Feed Roller Motor, returns the feed nip roller to the open position, and reports status to the MCS.

Home the Pickup Arm—This command:

1. Moves the pickup arm off the home position, if it is home.
2. Moves the pickup arm back home (Pickup Position Sensor).
3. Reports status to the MCS.

Home the Feed Nip Rollers—This command:

1. Moves the feed nip rollers toward the closed position until the Feed Roller Open Sensor is activated or until a preset timeout.
2. Moves the rollers toward the home position until the Feed Roller Open Sensor deactivates.
3. Reports status to the MCS.

Diagnostics—The diagnostics for the pickup and feed functions exercize essentially all the commands described above.

6-3-6-4. Cartridge Elevator Functions

The MCS software uses the following commands to control cartridge elevation:

Raise Cartridge—This command:

1. Checks the following before moving the elevator (via the Elevator Motor):
   - The pickup arm is home (Pickup Position Sensor).
   - The cartridge is closed (Rollback Home Sensor), if a cartridge is loaded.
2. Starts the Elevator Motor, moving the cartridge up for a preset time, then stops the motor.
3. Reports status to the MCS.

Lower Cartridge—This command:

1. Rotates the rollback mechanism (Rollback Motor) 360 degrees or until the Rollback Home Sensor activates.
2. Starts the Elevator Motor, moving the cartridge down for a preset time, then stops the motor. (The Elevator Home Sensor is checked to see if the elevator lowered to the proper position.)
3. Reports status to the MCS.

Stop Elevator—This command stops the Elevator Motor and reports status to the MCS.

Diagnostics—The elevator diagnostics move the elevator off the home position (if it is home), return it home, and then report status to the MCS.

6-3-6-5. Cartridge Rollback Functions

The MCS software uses the following cartridge rollback commands:

Open Cartridge—This command:

1. Checks the following before starting the Rollback Motor:
   - The pickup arm is home (Pickup Position Sensor).
   - A cartridge is loaded (Cartridge Present Sensor).
   - The elevator is home (Elevator Position Sensor).
2. Starts the Rollback Motor to roll back (open) the cover for a preset time, then stops the motor.
3. Reports status to the MCS.

Close Cartridge—This command starts the Rollback Motor to close the cover for a preset time, then stops the motor.

Stop Rollback—This command stops the Rollback Motor and reports status to the MCS.

Diagnostics—The rollback diagnostics move the rollback mechanism off home (if it is home), return it home, and then report status to the MCS.

6-3-7. Local Panel Module

The Local Panel is responsible for user interface with the system. It contains a Slave CPU, a 2 x 20 LCD Display, a membrane switch assembly, five LEDs, and a beeper.

6-3-7-1. Slave CPU

The Slave CPU connects directly with the LCD and membrane switch via its I/O ports. The CPU contains 8 Kbytes of Flash EPROM, 256 bytes of RAM, and three counter/timers. It communicates with the LCD and membrane switch as described in the following paragraphs.

6-3-7-2. LCD Display

The LCD interface with the CPU includes an 8-bit data bus and three control lines: E, RS, and R/W. To perform a read of the LCD, the CPU must:

1. Begin with E set low.
2. Set R/W high, and set RS to the appropriate value.
3. Set E high.
4. Read the data lines (port 2) from the LCD.
5. Set E low.

To perform a write to the LCD, the CPU must:

1. Begin with E set low.
2. Set R/W low, and set RS to the appropriate value.
3. Place the data to write on the data lines (port 2) to the LCD.
4. Set E high.
5. Set E low.

The controller present in the LCD contains 40 bytes of RAM that are accessible to the CPU for storage of data, if needed. The backlight for the LCD is under software control. When BACKLIGHT ON is set high, the LCD is lighted.

6-3-7-3. Membrane Switch

The membrane keypad is a scanned switch array, requiring software to perform a scanning sequence to determine whether a switch has been pressed. The switch array is similar to the one shown in Figure 6-13. In the diagram the rows of the array are connected to CPU port outputs, and the columns are connected to port inputs. To scan the array, the CPU drives a single row to ground while holding the other rows high, then repeats the process for each succeeding row. When a particular row is at ground, any key pressed in that row will pull the corresponding column signal low. The sequence for reading a keypad like that shown in Figure 6-13 is as follows:

1. Place a 0 on row 0 and a 1 on all other rows.
2. Read the column lines. If any line is low, the key corresponding to that row and column has been pressed. (Software must handle the operation requested by the key.)
3. Place a 0 on row 2 and a 1 on all other rows.
4. Read the column lines. If any line is low, the key corresponding to that row and column has been pressed.
5. Repeat the process for row 3, etc.

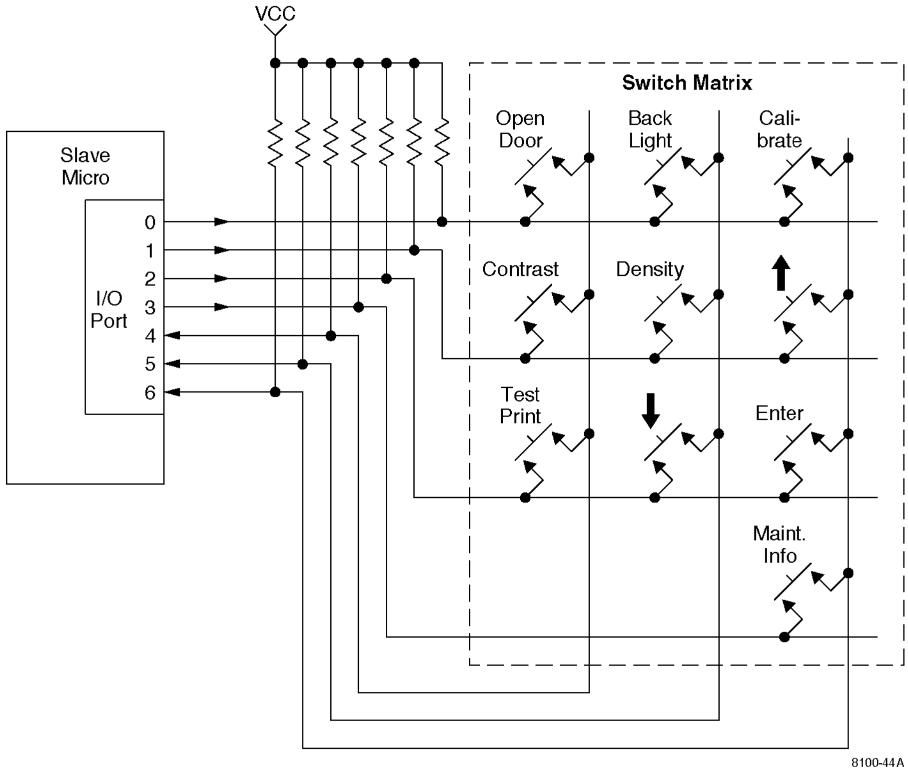


Figure 6-13. Switch Matrix

Table 6-3 identifies the Local Panel switches, and shows the pins on CPU port 0 that are “shorted” during the scanning process when a particular switch is pressed.

Table 6-3. Matrix Switching

Switch Name	CPU Port 0 Pins Shorted
Open Door	0 (row) to 4 (column)
Backlight	0 to 5
Calibrate	0 to 6
Contrast	1 to 4
Density	1 to 5
Up Arrow	1 to 6
Test Print	2 to 4
Down Arrow	2 to 5
Enter	2 to 6
Maintenance Information	3 to 6

6-3-8. Processor Interface Board

The Processor Interface Board controls application of 120 volt ac power to the processor heater. It is part of a control loop that includes (1) the Processor RTD, which senses the current temperature of the processor, (2) a Voltage to Frequency Converter, which converts the analog signal from the RTD to a digital frequency- modulated signal, and (3) the Master CPU, which calculates the power-on duty cycle required to keep the heater at the required temperature. The primary components of the Processor Interface Board are two relays:

- Relay K2—When power is applied to the **DryView** 8100 and the top hood is closed, this relay is energized and applies the Line (hot) side of 120 volts ac to the Load 1 terminal of Relay K1. (The neutral line of 120 vac is applied directly to one side of the processor heater.)
- Solid State Relay K1—This relay is controlled by the PROC SSR DRIVE signal from the MCS Board. This pulse width modulated signal provides a low (ground) that actuates the solid state relay for duty cycles controlled by the Master CPU on the MCS Board. When the relay is actuated, 120 vac is applied to the processor heater via the Load 2 terminal of the relay. LED1 lights when the solid state relay is energized.

6-3-9. DC Power Supply

The DC Power Supply receives 120 volts ac from the secondary of Power Transformer T1 when Circuit Breaker CB1 and the Power Switch are closed. The power supply provides the following outputs to the MCS Board, which distributes dc power to the remainder of the MCS and IMS:

- +24 volts ± 5 %
- +12 volts ± 5 %
- -12 volts ± 5 %
- +5 volts (VCC) ± 5 %
- P FAIL IN—This signal indicates that a supply voltage is out of specification.

The Service Switch and interlocks on the front door, rear service panel, and top hood can interrupt +12 volt and/or +24 volt dc power to certain circuits, as shown on sheet 2 of the functional diagrams in Section 9.

6-3-10. MCS Print Sequence of Operation

The MCS is involved in six basic operations in the normal course of printing a sheet of film. These, described in Figure 6-14, are the following:

- Power up
- Pickup up film
- Load the exposure platen
- Expose the film
- Unload the platen
- Process the film

The processes of film pickup through processing are flowcharted in Figure 6-15 through Figure 6-19. In addition, the front door close operation is flowcharted in Figure 6-20, and front door open is flowcharted in Figure 6-21.

Note

Dotted lines between components on the flowcharts indicate that the function is a MicroComm subsystem operation.

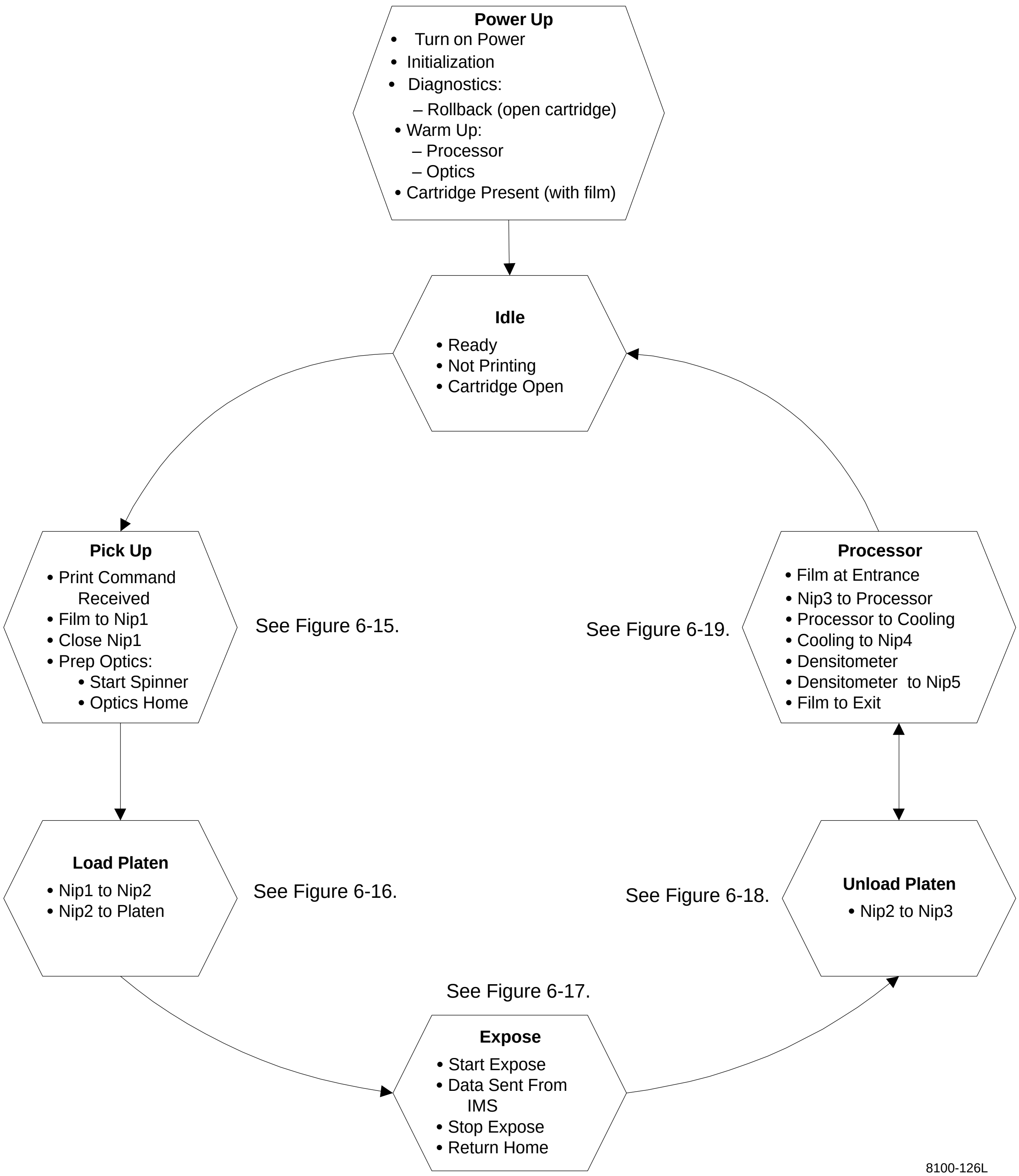


Figure 6-14. MCS Basic Operations

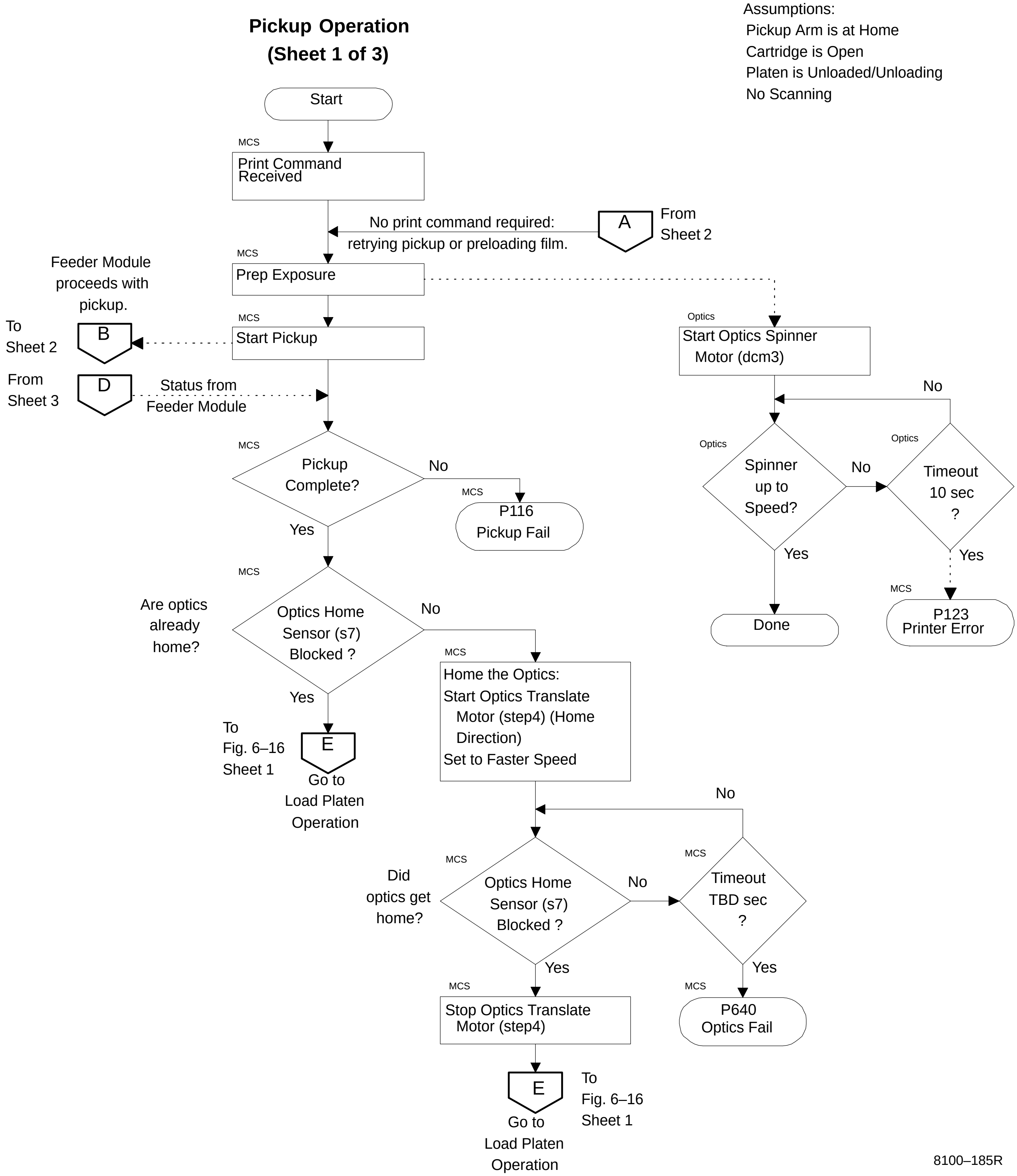


Figure 6-15. Pickup Operation (Sheet 1 of 3)

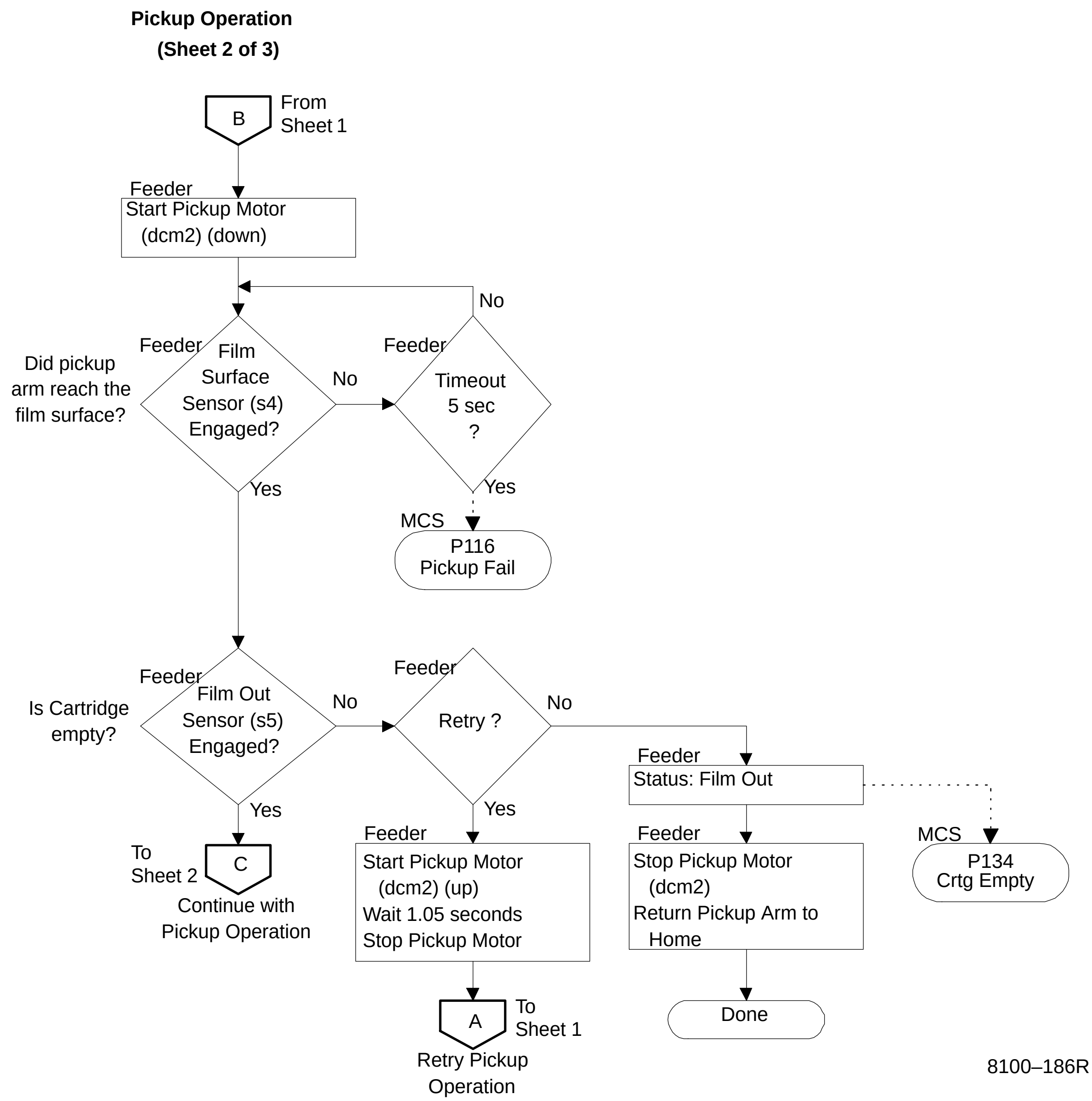


Figure 6-15. Pickup Operation (Sheet 2 of 3)

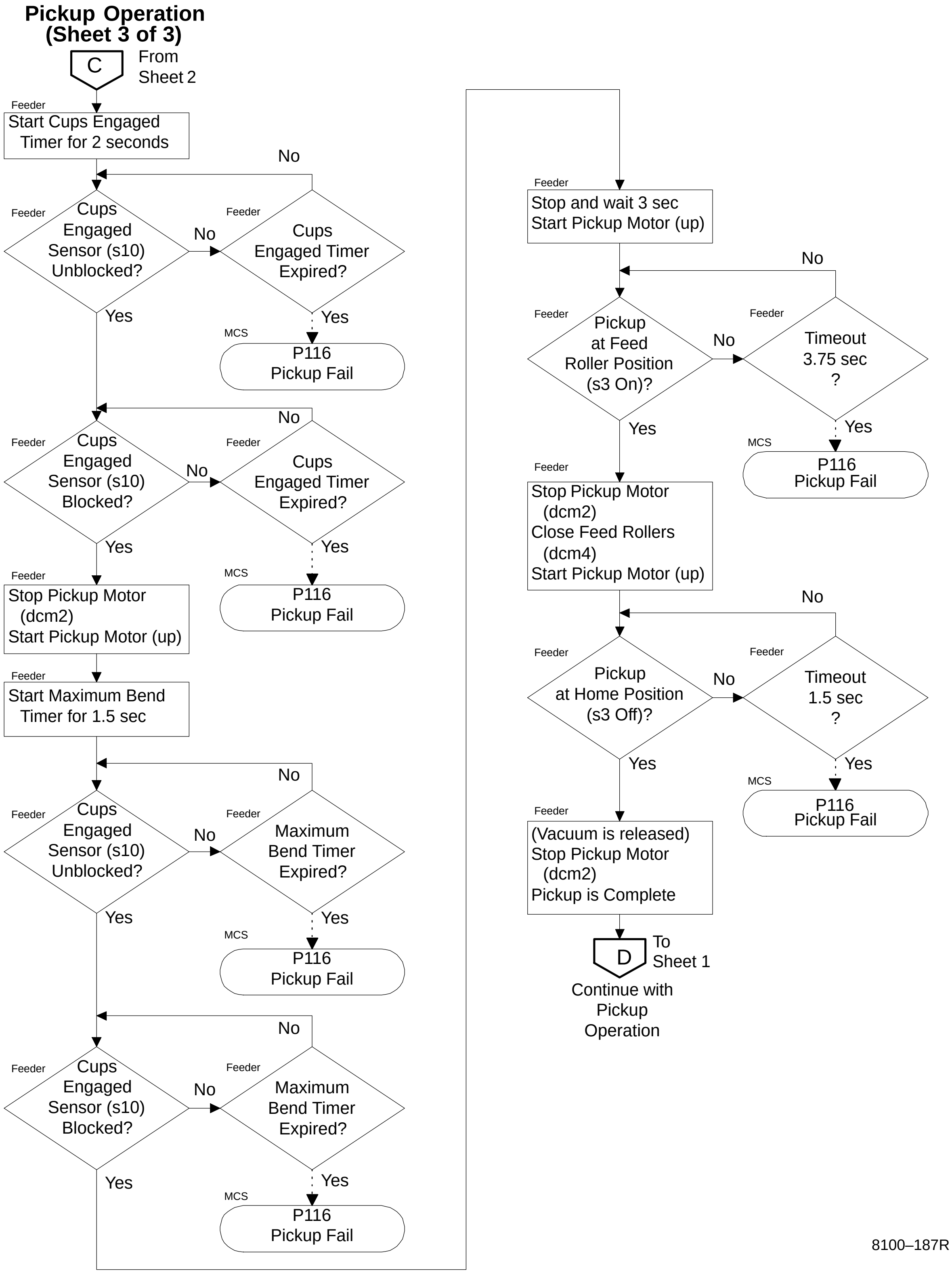


Figure 6-15. Pickup Operation (Sheet 3 of 3)

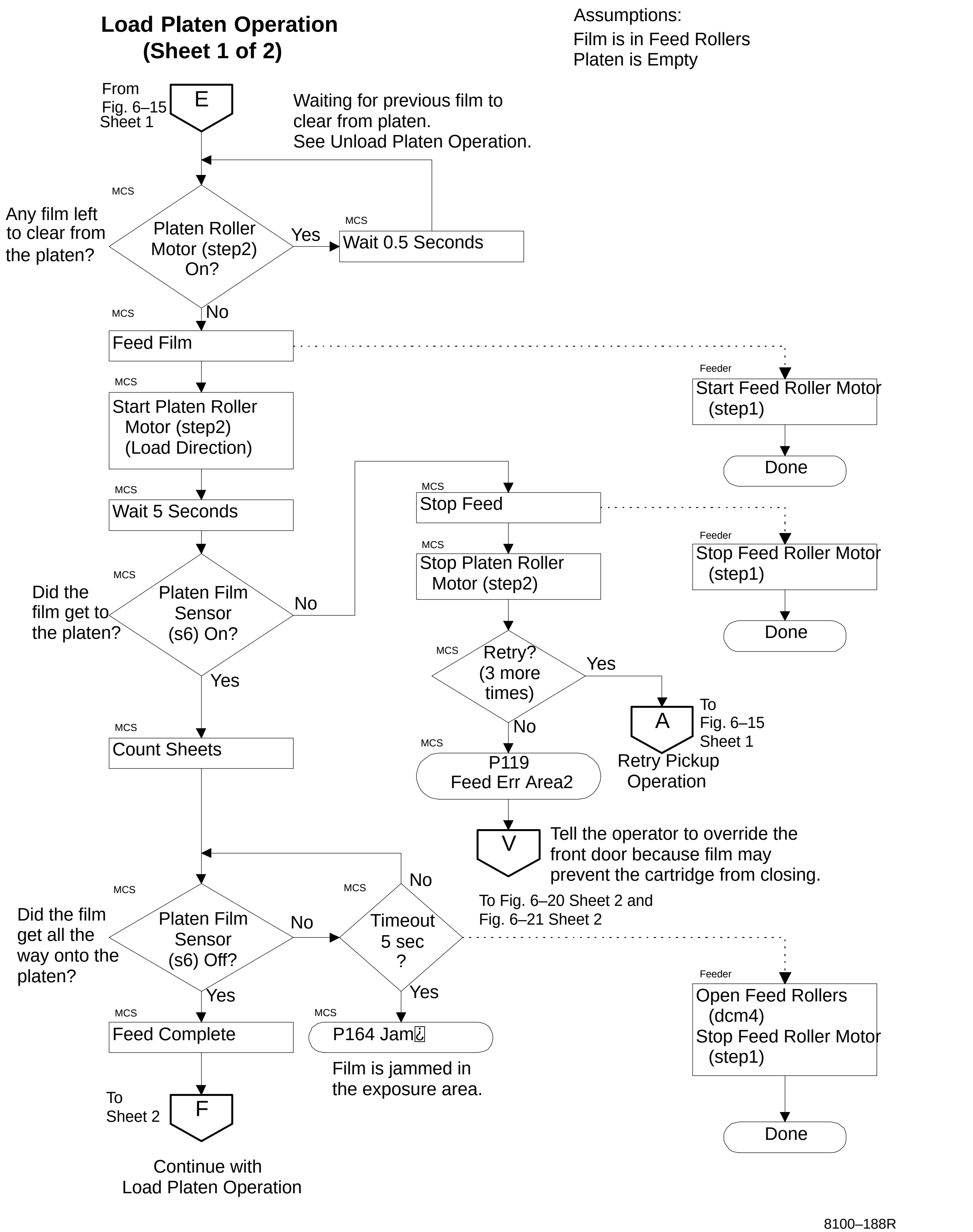


Figure 6-16. Load Platen Operation (Sheet 1 of 2)

Load Platen Operation
(Sheet 2 of 2)

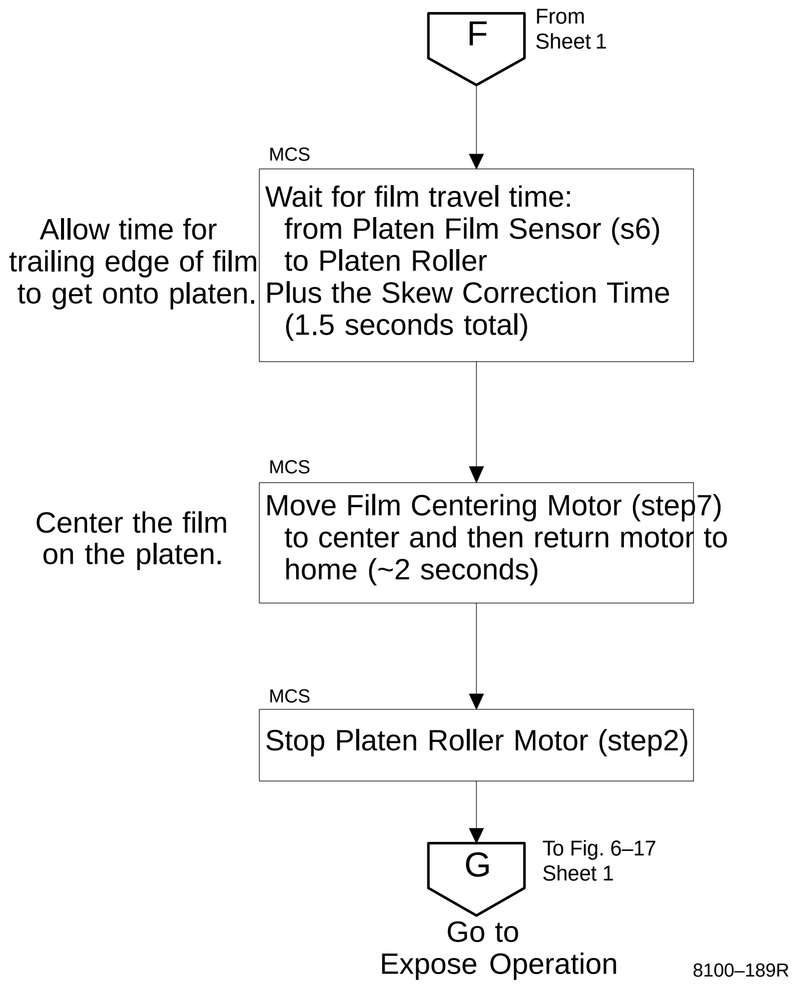


Figure 6-16. Load Platen Operation (Sheet 2 of 2)

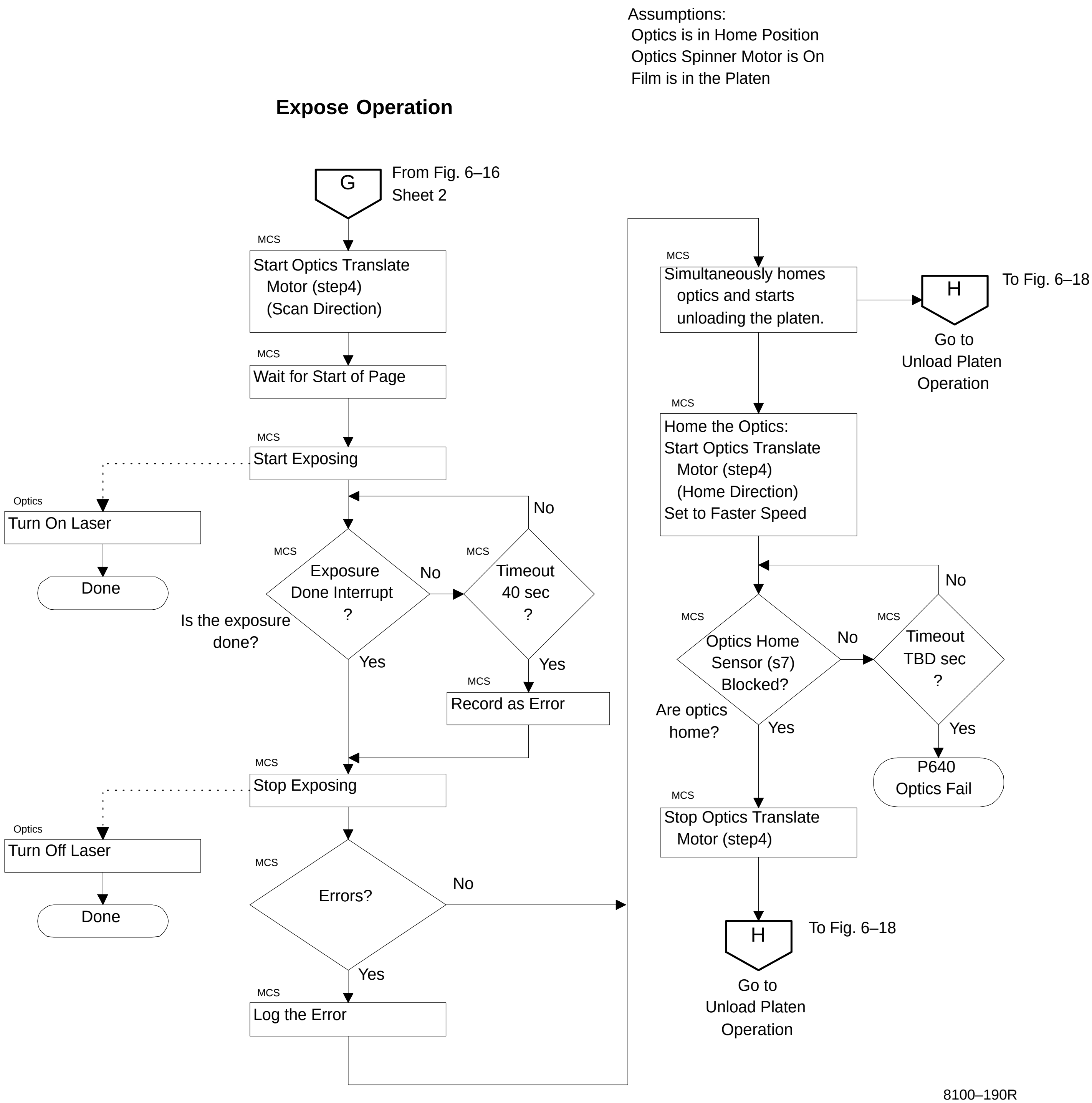


Figure 6-17. Expose Operation

Unload Platen Operation

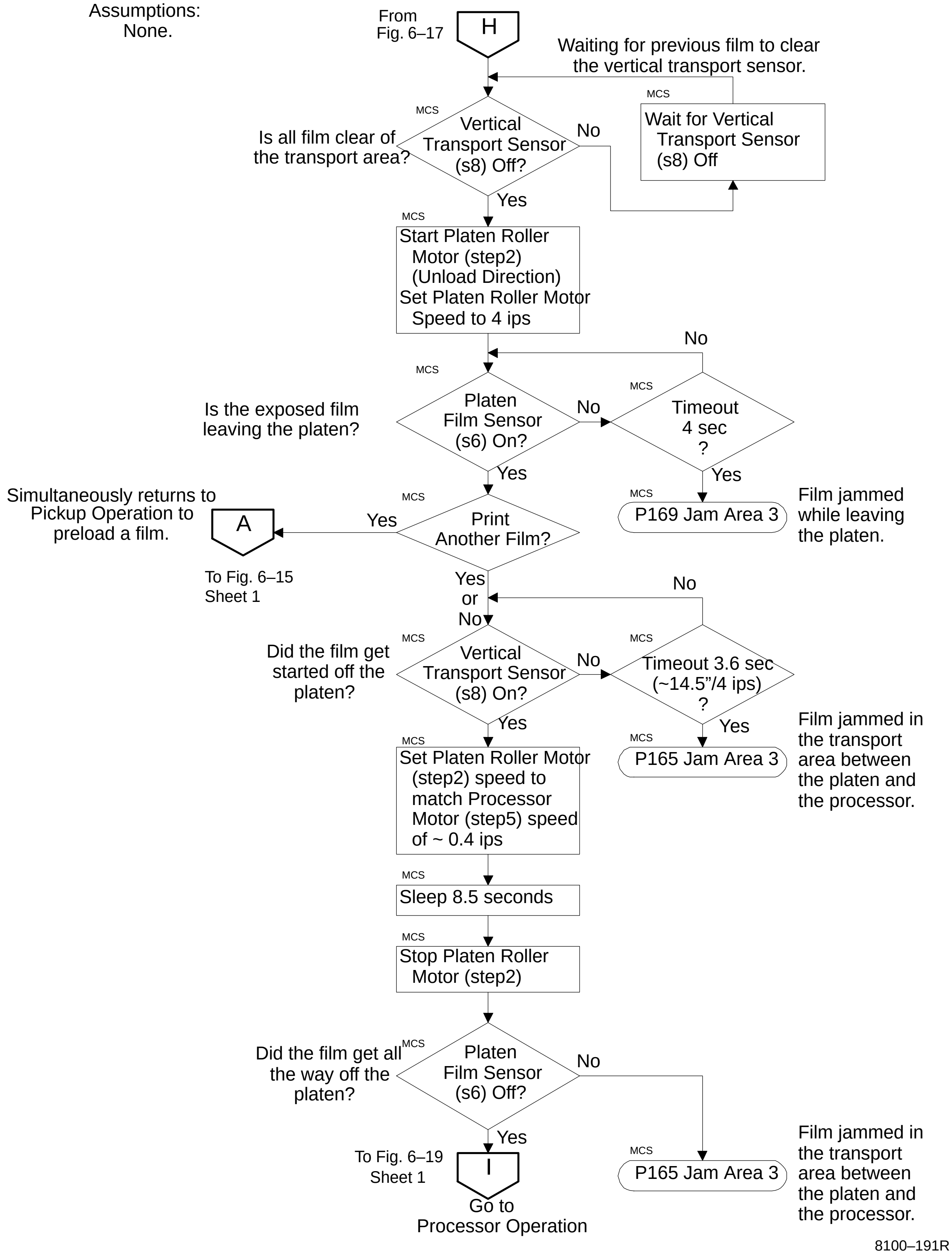


Figure 6-18. Unload Platen Operation

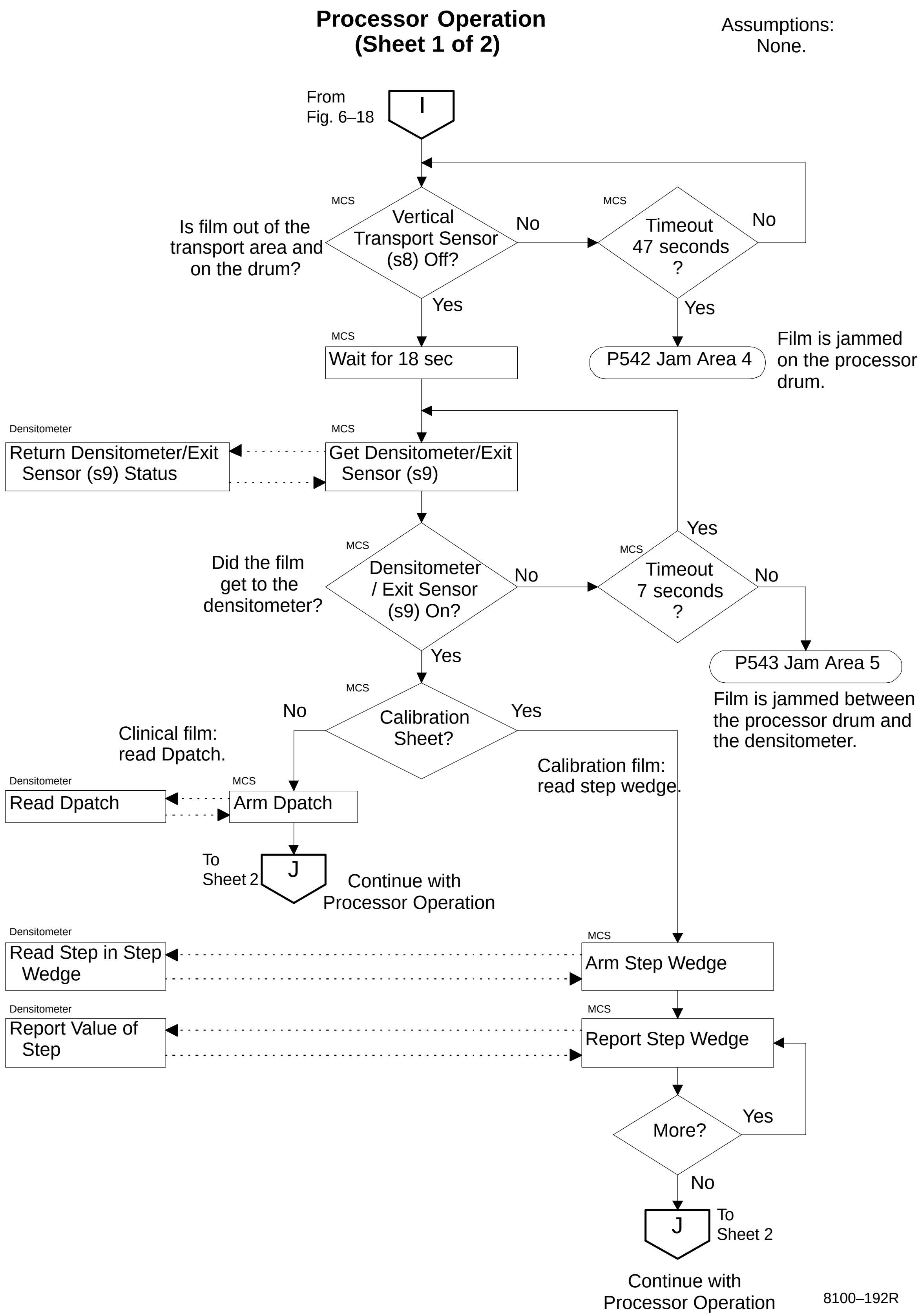


Figure 6-19. Processor Operation (Sheet 1 of 2)

Processor Operation
(Sheet 2 of 2)

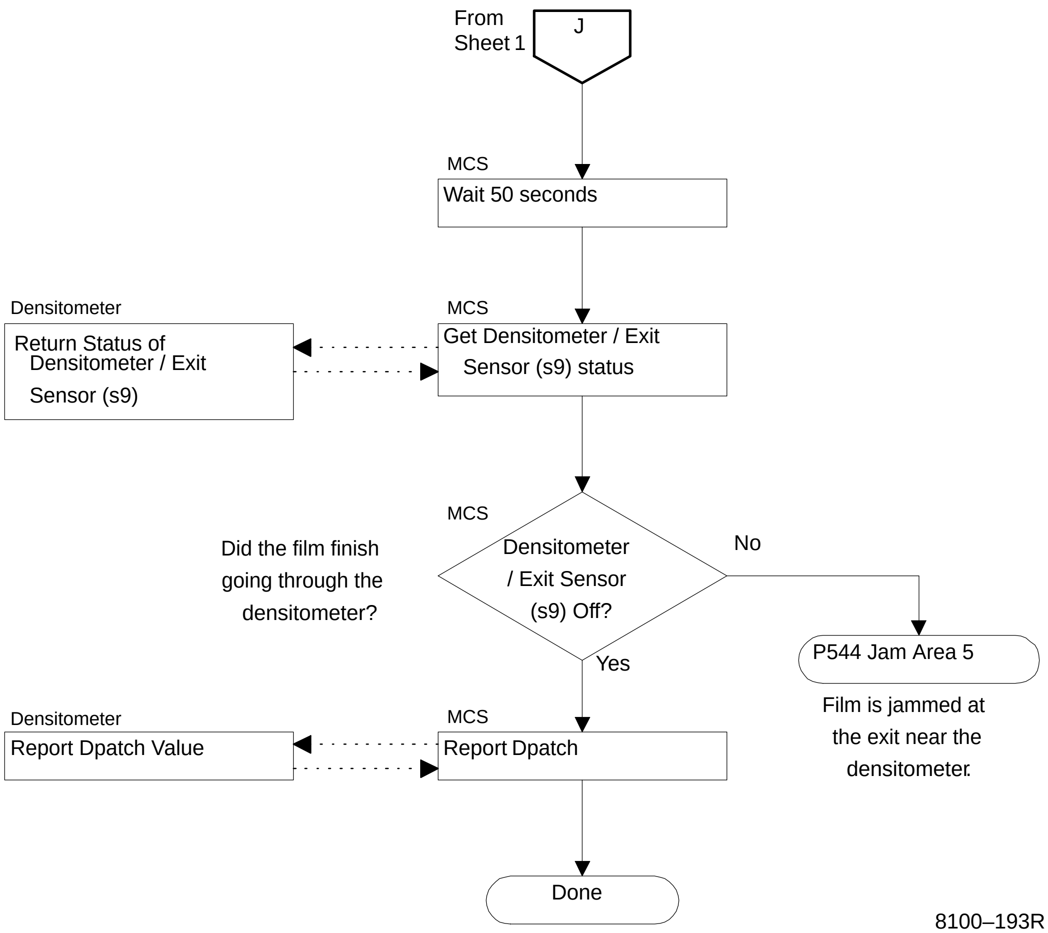


Figure 6-19. Processor Operation (Sheet 2 of 2)

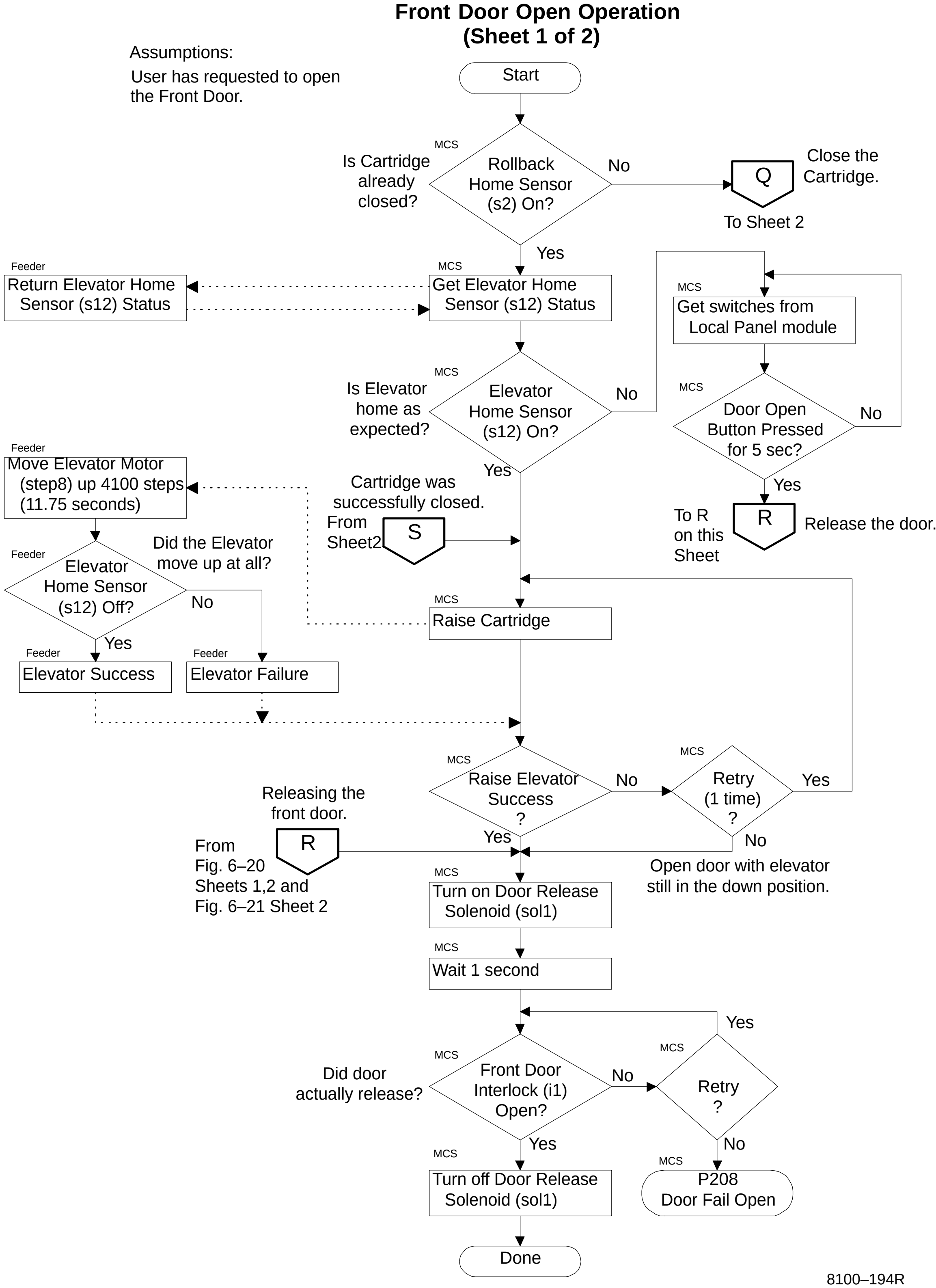


Figure 6-20. Front Door Open Operation (Sheet 1 of 2)

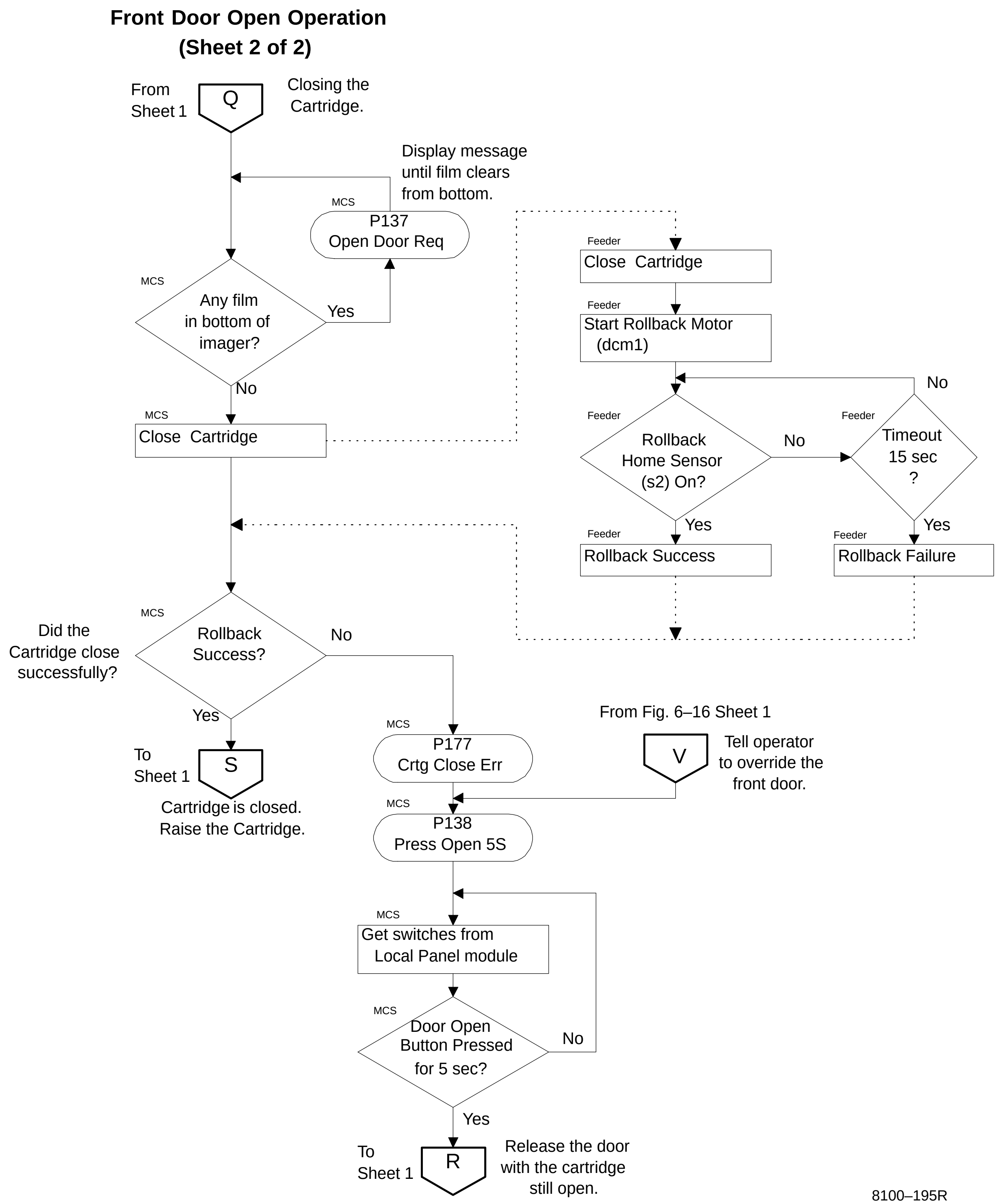


Figure 6-20. Front Door Open Operation (Sheet 2 of 2)

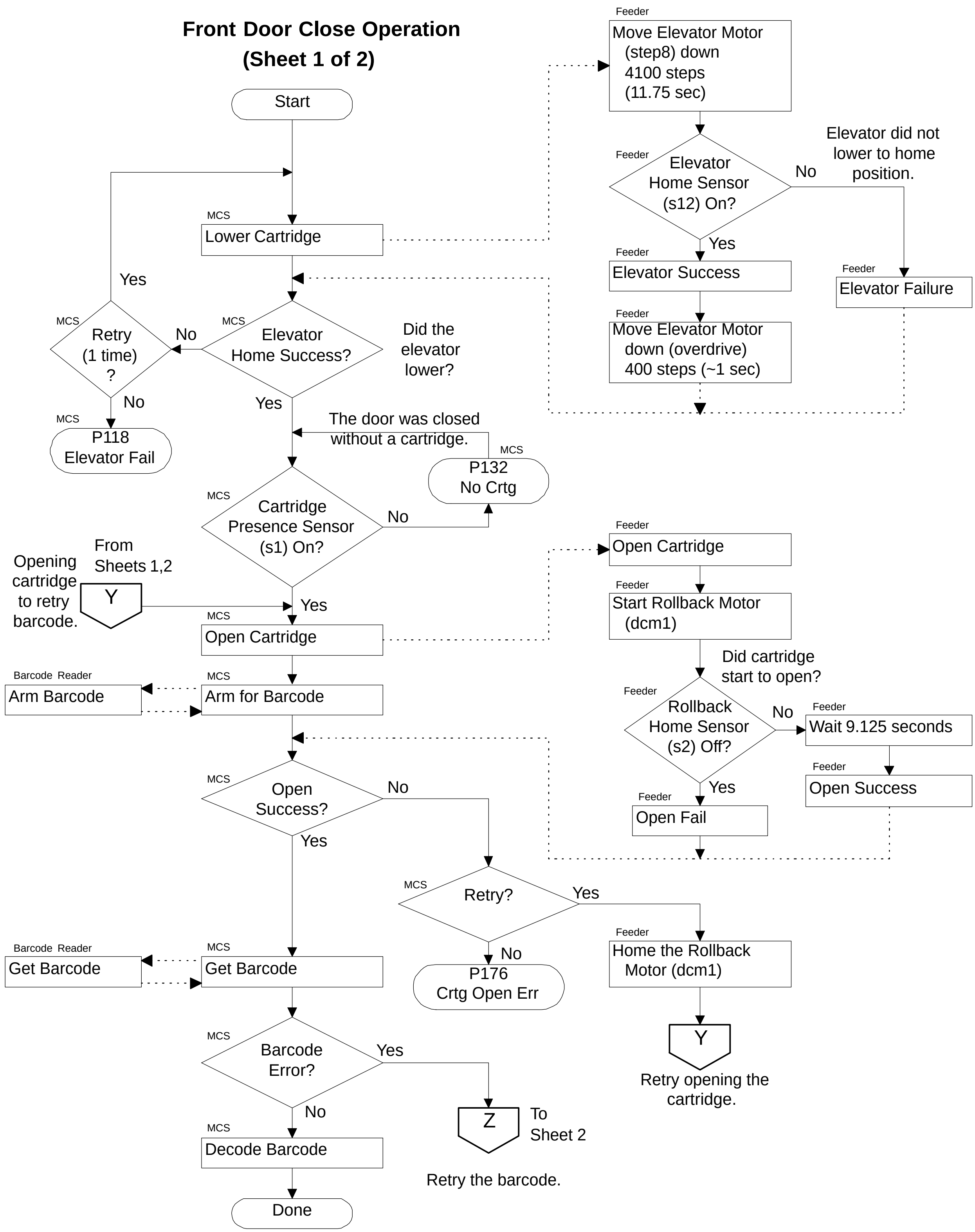


Figure 6-21. Front Door Close Operation (Sheet 1 of 2)

Front Door Close Operation
(Sheet 2 of 2)

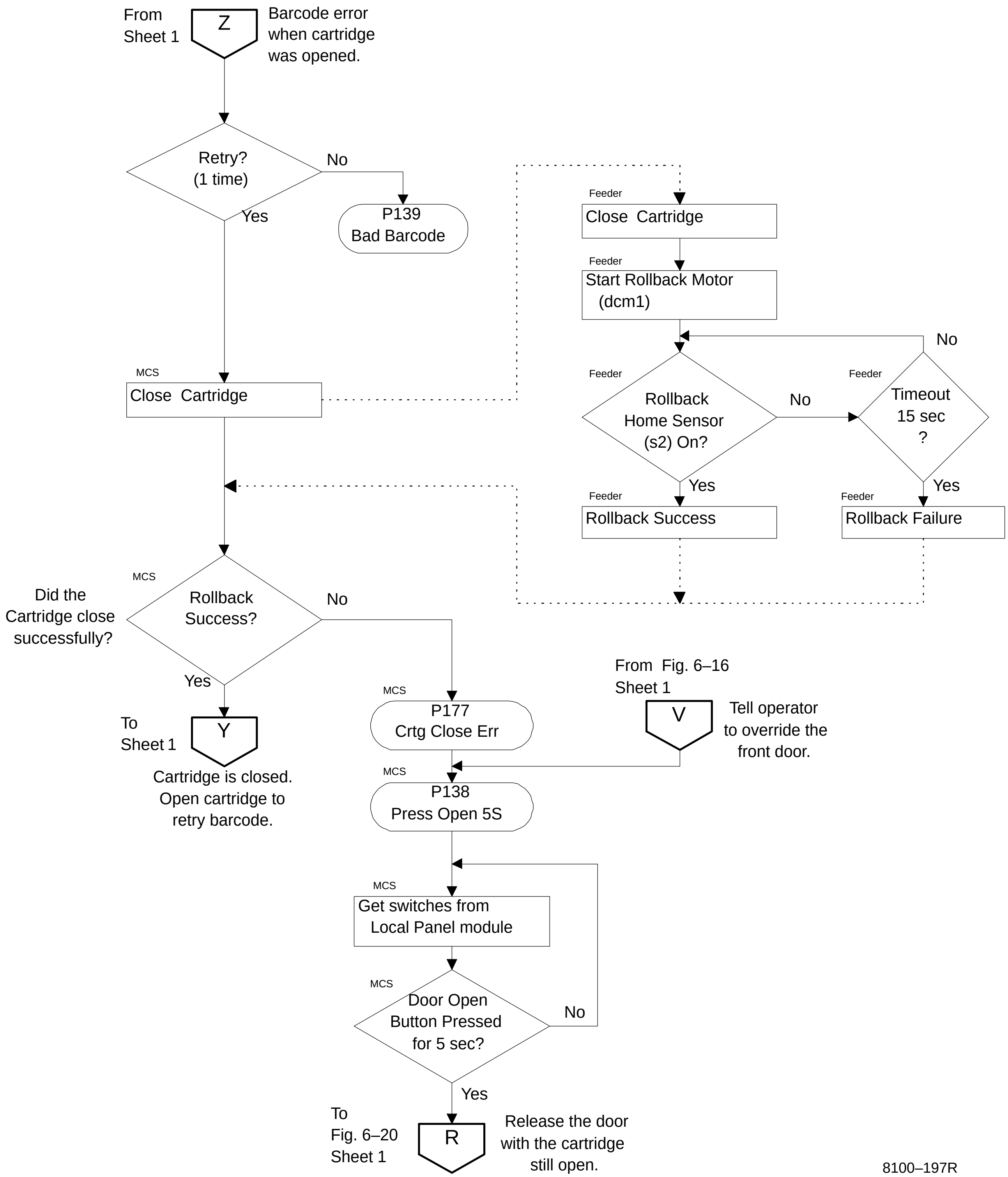


Figure 6-21. Front Door Close Operation (Sheet 2 of 2)

6-3-11. Special Service Mode Operations

When the **DryView** 8100 is operating in service mode (Service Override Switch actuated), the MCS always sees the front door as being closed. Be familiar with the following operations for controlling film cartridge functions when in service mode:

- <u>To close the film cartridge and open the front door</u>: Use the Local Panel Open Door key. The cartridge will close, the elevator will rise and the front door will open, as normal. But the Local Panel will indicate P208 Door Open Fail. (The front door still appears closed in service mode.)
- <u>To lower the elevator and open the film cartridge</u>: Set the Service Switch to normal mode. The MCS will see the front door as being open. Set the service switch back at service mode. The MCS will see the front door as closed, and will lower the elevator and open the cartridge. The imager will now be prepared to transport film.

6-4. AIQC and GSM

The AIQC (Automatic Image Quality Control) system and GSM (Gray Scale Manager) software work together to provide image quality control.

- AIQC includes the entire subsystem of optics, densitometer, processor, barcode reader, and LUTs (Lookup Tables) that ensures consistent density from image to image.
- GSM is the software that receives information from the densitometer, optics, and barcode reader, creates the LUTs, and defines the attenuator setting for the optics.

6-4-1. Power up, Calibration, and Print Sequence

Figure 6-22 illustrates the sequence of power-up initialization, diagnostics, calibration, and printing that involves the AIQC components and GSM.

1. Initialize—At power up a series of self-tests is run on the optics, densitometer, and barcode reader. When these tests have completed successfully, optics calibration and diagnostics are performed.
2. Read the Film Cartridge Barcode—When a cartridge is loaded and opened, the barcode on the bottom of the cartridge is read. The barcode data includes emulsion, jumbo, band, film type (blue or clear), version number and cartridge ID. The slave micro on the Barcode Reader Board passes the emulsion, jumbo, band, and type information to the GSM. (This information is called the “sensi” data.)
3. Load the Film Model—After receiving the sensi data read from the barcode, GSM searches for the appropriate Film Model. If it finds the Film Model, the Media LUT is created (go to step 6). If a Film Model has not yet been created for this sensi data, or if the Film Model is older than one week (no calibration for over a week), a calibration print is scheduled (step 4).
4. Create and Read a Calibration Print—The calibration print creates the Film Model and the resulting Media LUT. A calibration print is requested in any of the following circumstances:
   - A cartridge is loaded with an emulsion number, jumbo, band, and type that are not defined in the Film Model.
   - A calibration request is issued from the Local Panel.
   - The target DPatch does not equal the DPatch moving average (see step 9 below).
   - More than one week has elapsed since the last calibration print for the current cartridge.
5. Create a New Film Model—The Film Model is built from the sensi data read from the barcode, the time stamp (date of the last calibration), Dmin and Dmax values established in calibration, calculated film speed, and DPatch data.
6. Create a Media LUT—The data from the Film Model is used to create an LUT that interpolates required laser diode intensity values into the pixel array passing through the LUT.
7. Set the Attenuator—The attenuator is set to obtain the required film densities.
8. Print the film—The film is printed using the Media LUT and attenuator setting established by the Film Model from calibration data.
9. Read the DPatch when Film is Printed— For each image printed, the density of the DPatch on the top border of the film is measured. The density read is used to adjust the optics attenuator as follows:
   - If Target DPatch = DPatch Moving Average, no attenuator correction is required.
   - If Target DPatch – DPatch Moving Average < or = 0.2, the attenuator must be adjusted.
   - If Target DPatch – DPatch Moving Average > 0.2, a calibration print must be scheduled.
10. Adjust the Attenuator, if necessary—The attenuator setting is adjusted to obtain corrected density readings on ensuing DPatches.

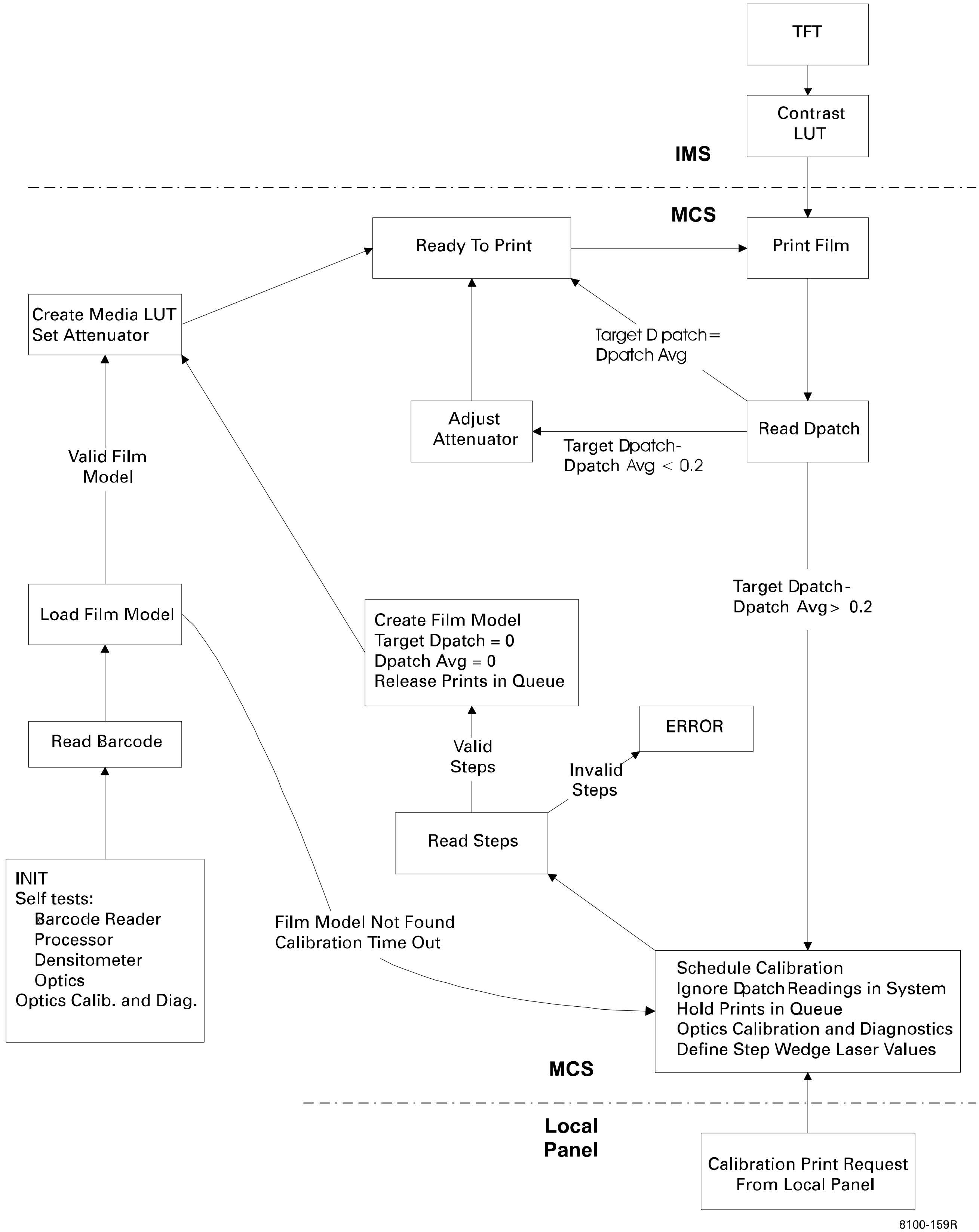


Figure 6-22. Sequence of AIQC and GSM Functions

Section 7 – Troubleshooting

7-1. General Troubleshooting/ Error Logs/ Error Tally

General Troubleshooting

Table 7-1 contains a list of machine problems, along with causes and recommended remedies.

Table 7-1. 8100 Problem Analysis

Problem	Cause	Remedy
Error code on Local Panel.	Machine control failure.	See paragraph 7-7.
8100 hangs up during a machine functional sequence. Error code indicates a suspect sensor or motor.	Failed sensor Failed motor	See paragraph 7-2. See paragraph 7-3.
Unable to connect Service PC to 8100 via browser.	Proxy server not disabled. Using straight-through cable instead of crossover. Using Service PC IP address rather than 8100 address. Using incorrect Service PC IP address. Using leading zeros in IP address. Network card in PC disabled.	See paragraph 7-4-1.
Unable to connect to 8100 via a hub.	Hub not powered up. Using crossover rather than straight-through cable. Cable from PC to hub not plugged into uplink port. Bad cable.	See paragraph 7-4-2.
Film problems:		
Scratches on film.	Dirt or foreign matter in film path.	See paragraph 7-5.
Light density streaks along 14 inch dimension of film.	Dust particle on optics lens.	Clean optics. See paragraph 5-5.
Left and right margins of film are not equal (at approx. 7 mm).	Optics translation speed off or SOP delay incorrect.	Adjust. See paragraph 3-4.
Image stretched or shortened.	Optics translation speed off or SOP delay incorrect.	Adjust. See paragraph 3-4.
Clear margin on side of film.	Optics translation speed off or SOP delay incorrect.	Adjust. See paragraph 3-4.
Vertical lines at regular intervals.	Flat spot on translation motor tire.	Replace motor and capstan. See paragraph 4-11-5.

Error Logs/Error Tally

Error Log. When a machine problem occurs, it is usually accompanied by an error code (see paragraph 7-8). The error code specifies the nature of the error, and is the starting point for trouble analysis. Before you do further trouble analysis to isolate the cause of the problem, it is useful to consult the appropriate error log in MPC. (Instructions for accessing and using MPC are provided in paragraph 7-9.) The MPC error logs, along with an error tally, are accessed under **Diagnostics** in the MPC main menu. Following is a list of the individual error logs that can be accessed:

Log Name	Level*	Log Contains
Acquire	6	Data on video and digital acquisition functions. (Very useful.)
System Daemon	6	Data on web server functions.
System Kernel	6	Data on core operating system functions.
System User	6	User data.
Syslog	6	Information on aging of the log files.
L2 Interpreter	6	Data on all 831/952 communications via the keypad or the host. (Very useful.)
DICOM	6	Not currently in use.
Gray Scale Manager	6	Information on calibration, Dpatch, densitometer, TFTs, etc. (Very useful.)
Image Processor	6	Data on image formatting functions. (Very useful.)
MCS	6	Data on machine hardware and firmware functions handled by MCS. (Very useful.)
MIB	6	Information on software variables in IMS that control machine functions. (Very useful.)
MPC	6	Data on MPC usage.
***** The default debug level for the log files is level 6. If you wish, you may increment the level to 7 to view data at that level. However, when you have completed viewing at level 7, you must return to level 6.		

Error Tally. The error tally contains a list that shows the number of times particular errors occur, providing a cumulative account of problem areas in the machine. Following is a sample listing in the error tally:

Error Code	Description	Tally
P75/L75	Local Panel Error	0
P116/L116	Pickup Arm Error	4
P117/L117	Pickup Failure	3
P121/L121	Attenuator Error	0
P132/L132	No Supply Cartridge	0
P133/L133	Media Low	5
P134/L134	Cartridge Empty	1
P138/L138	Press Door Open Button	2
P139/L139	Bad Barcode	3
P145/L145	Bad Media Type	0
P146/L146	Bad Media Size	0
P154/L154	Disk Problem	0

7-2. Sensor Functions

The system includes three types of sensors: a single flag-type and two kinds of U-type optical switches. (Actually, all the U-type sensors are alike but one, Optics Home Sensor S7, which is screw-mounted.) Functions of the sensors are described in Table 7-2. See the following pages for testing procedures.

Table 7-2. Sensor Functions

Ref Des	Sensor Description	Assembly	Type	Sensor Output
S1	Cartridge Present	Rollback	Flag	High (ON) when cartridge is loaded
S2	Rollback Home	Rollback	U–type	Low (OFF) when lid is closed
S3	Pickup Position	Pickup	U–type	High (ON) with pickup assy in feed position. Low when pickup assy is at top.
S4	Film Surface	Pickup	Flag	High (ON) when flag contacts film
S5	Film Out	Pickup	Flag	Low (OFF) when film is out
S6	Platen Film	Imaging	Flag	High (ON) when film contacts flag
S7*	Optics Home	Imaging	U–type	Low (OFF) when scanner is home
S8	Vertical Transport	Vert. Trans.	Flag	High (ON) when flag contacts flag
S9	Densitometer/Exit	Densitometer	Flag	High (ON) when film contacts flag
S10	Cups Engaged	Pickup	U–type	Low (OFF) when cups are squashed
S11	Feed Roller Open	Feed Roller	U–type	Low (OFF) when rollers are open
S12	Elevator Home	Elevator	U–type	Low (OFF) when elevator is down/home
	Attenuator Home	Scanner		Not observable (in optics module)
	Shaft Index	Scanner		Not observable (in optics module)
*Optics Home Sensor S7 is the only U-type sensor that is screw-mounted. Note in Figure 7-1 that S7 has a different pinout from the other sensors.				

Note
A blocked sensor = low = OFF (not conducting)

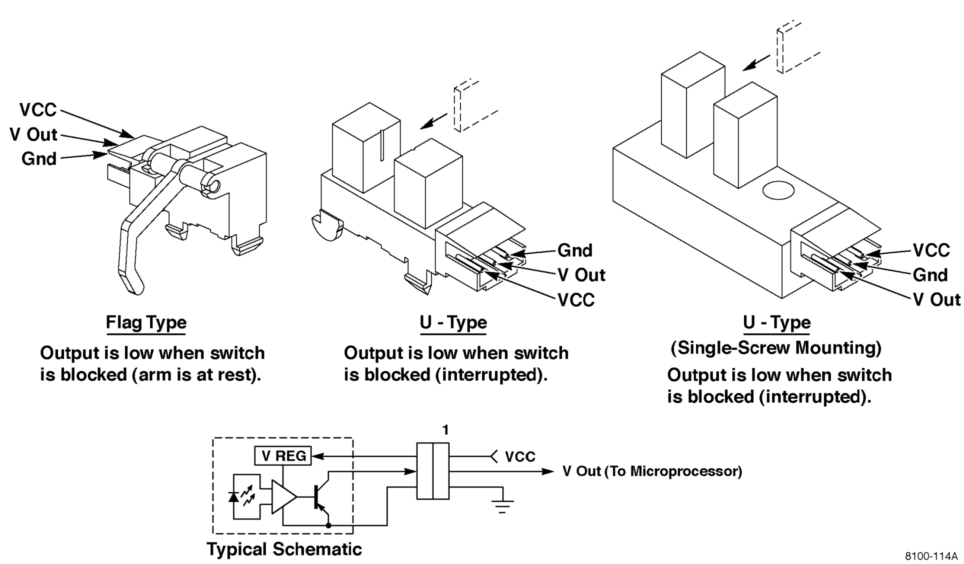


Figure 7-1. Sensor Types

7-2-1. Testing the Sensors

All 12 sensors are tied to LEDs which can be used in a test mode to monitor the operation of the sensors. The sensors report to micros on three different circuit boards. The LEDs for the sensors are located on these boards as described below.

- Sensors S1- S5 and S10-12 monitor film feed functions and report to the slave micro on the Feeder Control Board. The LEDs for these sensor are also on the Feeder Control Board. Sensor locations in the 8100 and locations of the corresponding LEDs are shown in Figure 7-2. (See paragraph 7-2-1-1 for testing procedure).
- Sensors S6 (Platen Film), S7 (Optics Home), and S8 (Vertical Transport) report to the master micro on the MCS Board. The LEDs for these sensors are located on the MCS Board. Sensor locations in the 8100 and locations of the corresponding LEDs are shown in Figure 7-3. (See paragraph 7-2-1-2.)
- Sensor S9 (Densitometer/Exit) reports to the slave micro on the Densitometer Board. The LED for this sensor is on the Light Source Board in the Densitometer Module. (See paragraph 7-2-1-2.)

All sensors can also be checked via MPC as described in paragraph 7-2-1-3.

7-2-1-1. Testing Film Feed Sensors S1-S5 and S10-S12 Via LEDs

Preliminary

1. Remove the film cartridge from the 8100 and leave the front door open.
2. Power off.
3. Remove the rear service panel.
4. Set the Service Override Switch in the Service position.
5. Set the JP2 jumper (LEDs) on the Feeder Control Board to short pins 1 and 2 (see Figure 7-2). (This will enable the LEDs.)
6. Set the JP3 jumper (sensors) to short pins 1 and 2. (This will enable the sensors.)
7. Power on and allow the 8100 to warm up.

Testing

1. Test the S1 (Cartridge Present), S2 (Rollback Home), or S12 (Elevator Home) sensor as follows:
   a. Check the state of the sensor: LED1 (Cartridge Present) should be off, LED2 (Rollback Home) on, and LED3 (Elevator Home) off.
   b. Load a cartridge of “transport” (waste) film. Set the Service Override Switch to the Normal position, then back to the Service position. Allow time for the cartridge to close.
   c. Check that the LED has changed state.
2. Test the Pickup Position (S3), Film Surface (S4), Cups Engaged (S10), or Feed Roller Open (S11) Sensor as follows:
   a. Check the current state of LED4 (for S3), LED5 (for S4), LED7 (for S10), or LED8 (for S11).
   b. Run a print sequence and check that the LED toggles during the sequence.
3. After completing the test, reset jumpers JP2 and JP3 in their normal positions (2-3).
4. Remove the transport film cartridge and restore the 8100 to normal operating state (unless you are going to test Sensors S6 through S9).

Note

To test Film Out Sensor S5 via LED6, you will have to manually toggle the sensor.

Ref Des	Sensor Description	Assy	Type	LED State on Feeder Control Board
S1	Cartridge Present	Rollback	Flag	LED1: On with no cart./ Off with cart. loaded.
S2	Rollback Home	Rollback	U–type	LED2: Off with lid open/ On with lid closed.
S3	Pickup Position	Pickup	U–type	LED4: Off in feed position/ On in top position.
S4	Film Surface	Pickup	Flag	LED5: Off when touching film/ On when not.
S5	Film Out	Pickup	Flag	LED6: Off with film/ On with no film.
S10	Cups Engaged	Pickup	U–type	LED7: On when squashed/ Off when not.
S11	Feed Roller Open	Feed Roller	U–type	LED8: On when open/ Off when closed.
S12	Elevator Home	Elevator	U–type	LED3: On when down/ Off when not.

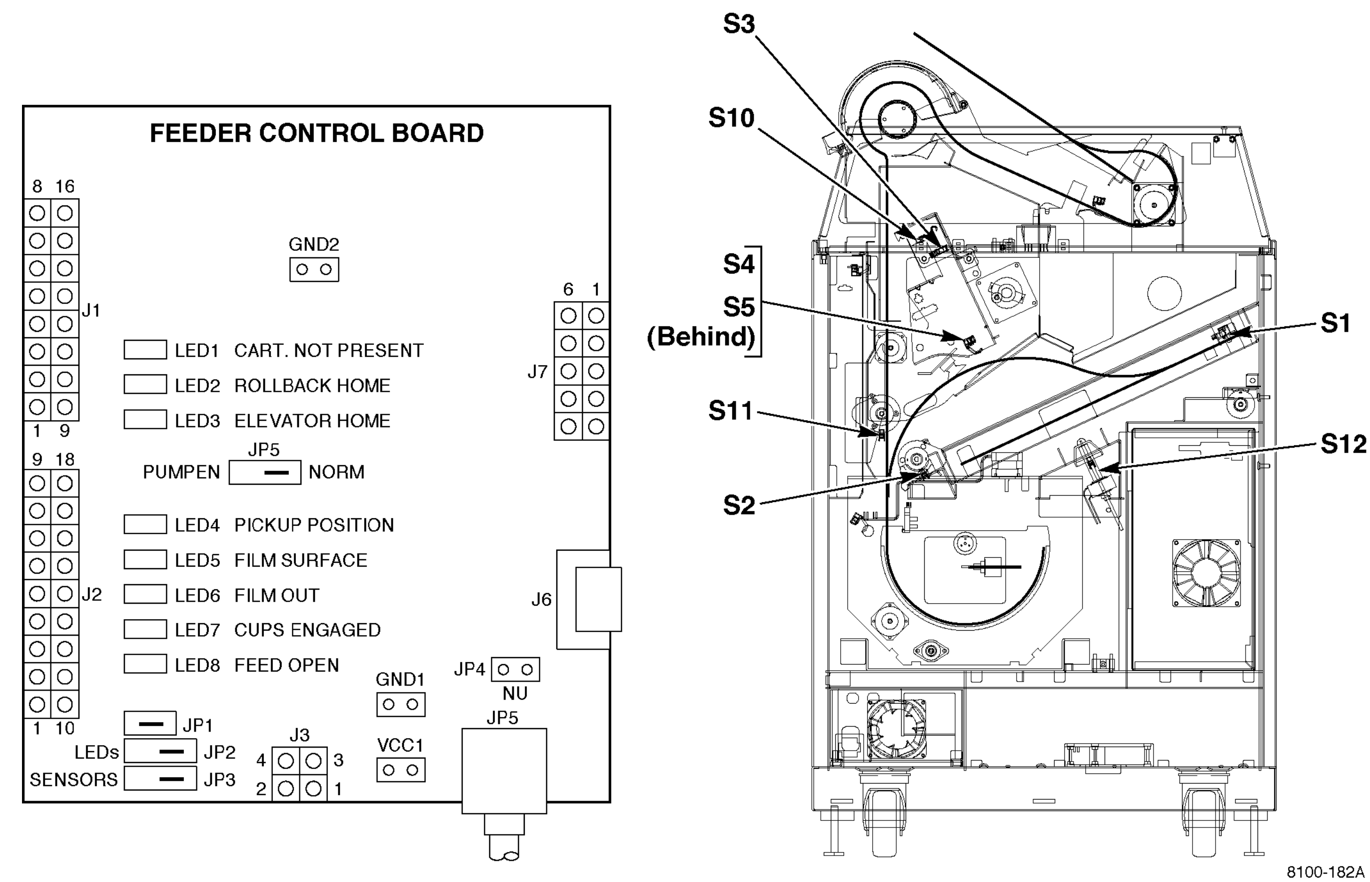


Figure 7-2. Film Feed Sensors and LEDs

7-2-1-2. Testing Sensors S6-S9 Via LEDs

The LEDs for S6 through S8 are located on the MCS Board (see Figure 7-3). The LED for S9 is located on the Densitometer Light Source Board. Use the LEDs to test these sensors as follows:

1. Make sure the imager is in the **Preliminary** state described in paragraph 7-2-1-1, except:
   a. Set the JP1 (LEDs) jumper on the MCS Board to short pins 1 and 2 (see Figure 7-3). (This will enable the LEDs.)
   b. Set the JP5 jumper (sensors) to short pins 1 and 2. (This will enable the sensors.)
2. Test the four sensors as follows:
   a. Check the state of the LED for the sensor.
   b. Load a cartridge of transport (waste) film. Set the Service Override Switch to the Normal position, then back to the Service position. Allow time for the cartridge to close.
   c. Run a print sequence and check that the LED toggles.
3. After completing the test, reset the jumpers and remove the cartridge of transport film.

Ref Des	Sensor Description	Assembly	Type	LED State on MCS Board
S6	Platen Film	Imaging	Flag	LED1: Off when film contacts flag.
S7	Optics Home	Imaging	U–type	LED2: On when scanner is home.
S8	Vertical Transport	Vert. Transport	Flag	LED4: Off when film contacts flag.
S9	Densitometer/Exit	Densitometer	Flag	LED2: Off when film contacts flag.

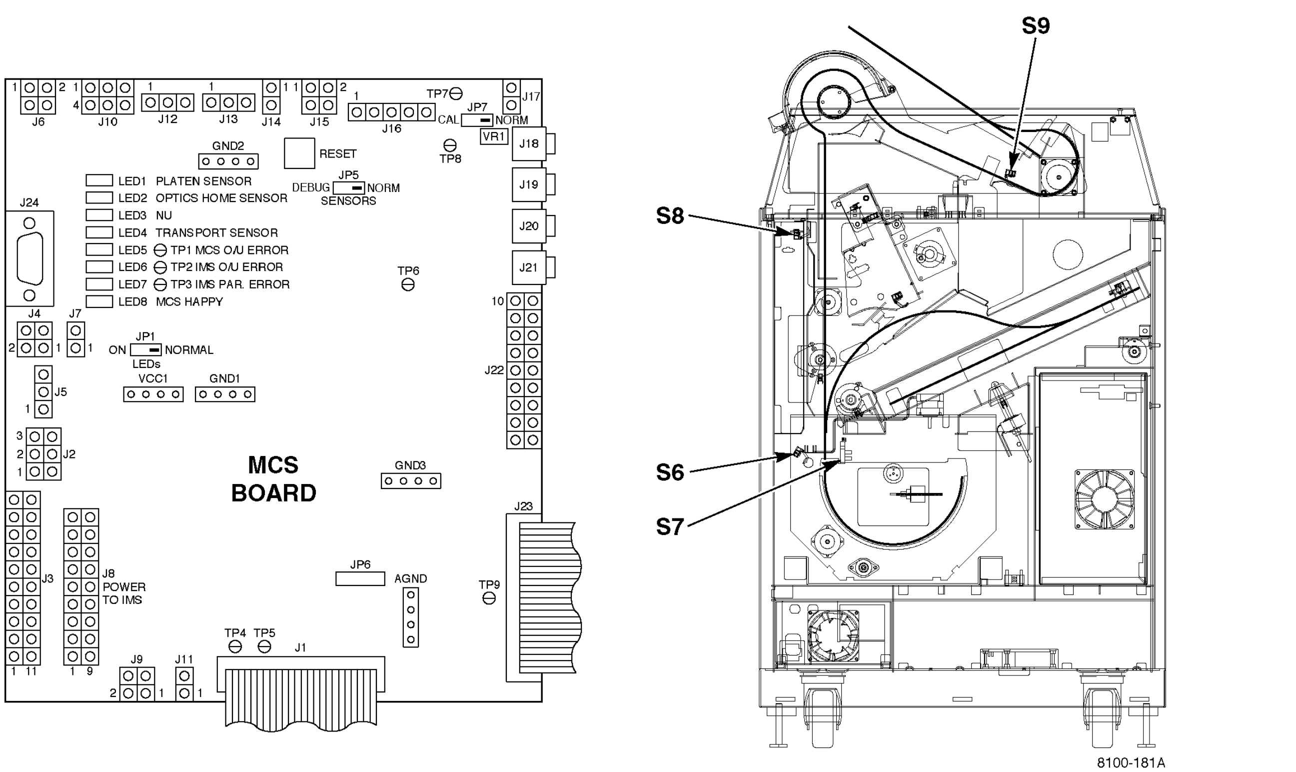


Figure 7-3. Sensors S6 through S9 and LEDs

7-2-1-3. Testing All Sensors Via MPC

All sensors can also be tested via MPC, as follows:

1. Connect the service PC and use the Internet Browser to access the MPC software (see procedures 7-9-3 and 7-9-4 for instructions, if necessary.)
2. From the MPC main menu, select **Diagnostics**, then **Sensors.** A window showing the current state of each sensor will display. Under normal conditions (film loaded) this screen will appear as follows:

Pickup Home	**ON**
Film Surface	OFF
Film Out	OFF
Cups Rotate	OFF
Feed Nip Rollers	OFF
Platen	OFF
Optics Home	**ON**
Transport	OFF
Exit	OFF
Rollback Home	OFF
Elevator Home	**ON**
Cartridge Present	**ON**

3. To test the bottom three sensors listed on the screen:
   a. Remove the film cartridge from the 8100.
   b. Check that the status on your PC screen toggles for all three sensors.
4. To test the remaining sensors listed on the screen:
   a. Load a cartridge of transport (waste) film.
   b. Run a print sequence and observe that status toggles for all the sensors.
5. Remove the transport cartridge.

7-3. Motor Functions

The system includes the dc motors listed in Table 7-3. Locations of the motors are shown in Figure 7-4. Only the Platen Motor, which is reversible and runs at both fast and slow speeds, can be directly checked via MPC. The procedure for checking this motor is as follows:

1. Connect the service PC and use the Internet Browser to access the MPC software (see paragraphs 7-9-3 and 7-9-4 for instructions, if necessary.)
2. From the MPC main menu, select **Diagnostics**, then **Motors & Solenoids**. The following list of selections will display:
   - Platen Motor Load
   - Platen Motor Off
   - Platen Motor Unload Fast
   - Platen Motor Unload Slow
   - Solenoid On (1 sec.)
3. Exercise the motor by selecting the options displayed.

Table 7-3. Motor Functions

Ref Des	Motor Description	Assembly	Power	Motor Drive Circuit
DCM1	Rollback	Rollback	Haz. +12 vdc	DC drive chip on Feeder Ctrl Bd.
DCM2	Pickup	Pickup	Haz. +12 vdc	DC drive chip on Feeder Ctrl Bd.
DCM3	Optics Spinner	Scanner	$\pm$ 12 vdc	DAC and driver on Optics Mod. Bd.
DCM4	Feed Roller Open	Feed Roller	Haz. +12 vdc	DC drive chip on Feeder Ctrl Bd.
Step 1	Feed Roller	Feed Roller	Haz. +24 vdc	Stepper drive chip on Feeder Ctrl Bd.
Step 2	Platen Roller	Imaging	Haz. +24 vdc	Stepper drive chip on MCS Bd.
Step 3	Optics Attenuator	Scanner	+12 vdc	Stepper drive chip on Optics Mod. Bd.
Step 4	Optics Translation	Scanner	Haz. +12 vdc	Micro/stepper drive chip on MCS Bd.
Step 5	Processor	Transport	Haz. +12 vdc	Micro/stepper drive chip on MCS Bd.
Step 7	Film Centering	Imaging	Haz. +12 vdc	Stepper drive chip on MCS Bd.
Step 8	Elevator	Elevator	Haz. +12 vdc	Stepper drive chip on Feeder Ctrl Bd.

Note

Hazard +12 and +24 vdc power is applied through Relay K1 on the MCS Board. When the rear service panel is removed or the front door is opened, this relay opens, disabling power to all motors that use “hazard” power.

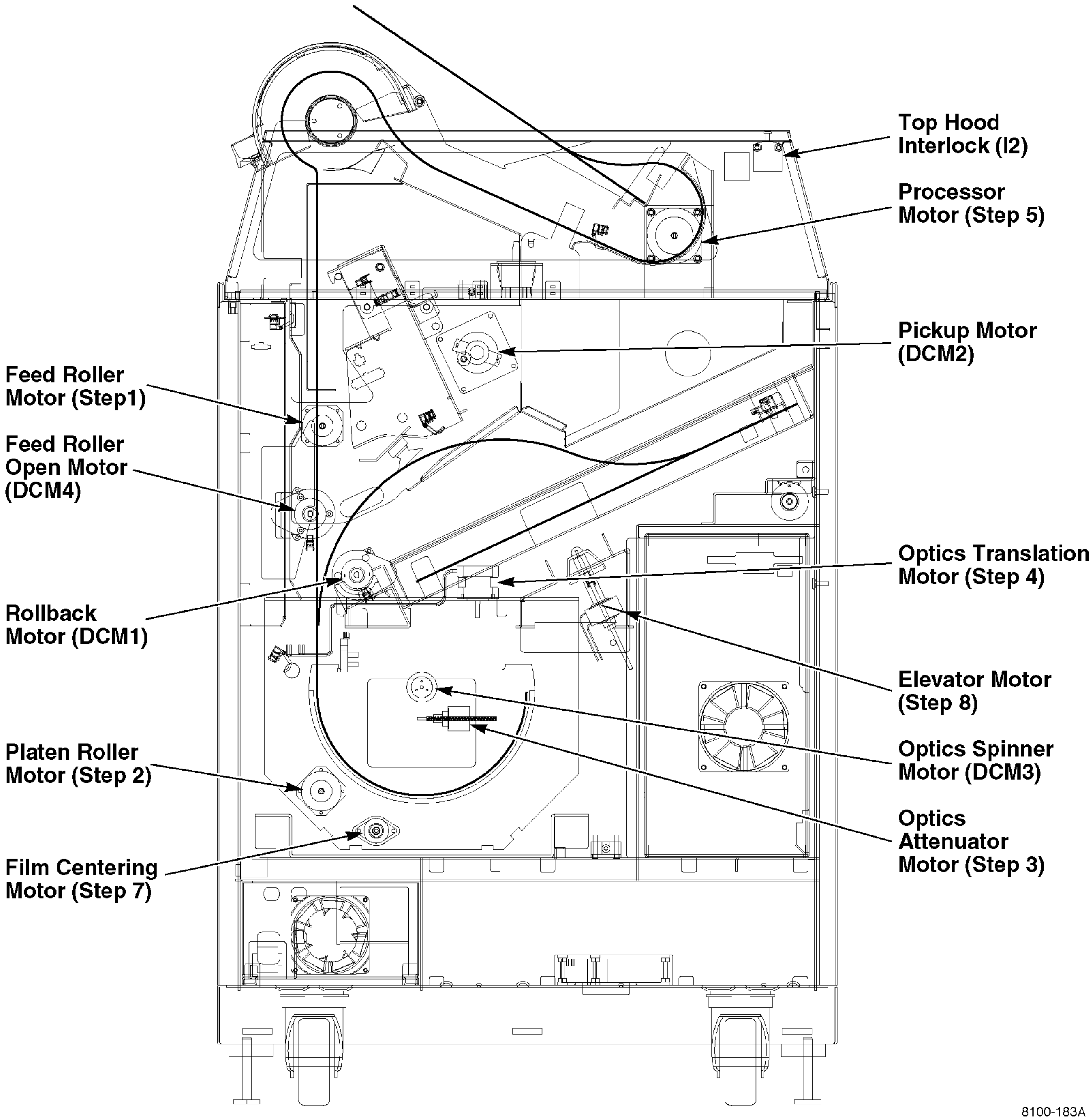


Figure 7-4. Motor Locations

7-4. Troubleshooting Network Services Problems

7-4-1. Failure to Connect to the 8100 Via a Browser

If you are unable to connect to MPC with the web browser, your PC will display one of the following messages:

Message 1: **The requested item could not by loaded by the proxy.**

or

Message 2: **Internet Explorer cannot open the Internet site http:// 163.228.48.xx Connection with server could not be established.**

Message 1: The first message indicates that the Proxy Server is not disabled. Proceed as follows:

1. Disable the Proxy Server as follows:

   If you are using Internet Explorer 4.0:

   a. Launch IE4.0.
   b. On the Menu bar, click on **View**. Then select **Internet Options**, and select **Connection Tab**.
   c. Under **Proxy Server**, uncheck **Access the Internet using a proxy server**.

   If you are using Internet Explorer 5.0:

   d. Launch IE5.0.
   e. On the Menu bar, click on **Tools**. Then select **Internet Options**, and select **Connection Tab**.
   f. In the **LAN Settings** area, click the **LAN** settings.
   g. Under **Proxy Server**, uncheck **Use a proxy server**.

2. After disabling the Proxy Server, attempt to connect with MPC again via the web browser. If you cannot, proceed as follows with **Step 1** below (same process as for Message 2).

Message 2: In response to the message that Internet Explorer could not open the 8100 Internet site: First check the IP Address on the status line at the bottom of your PC screen to make sure you entered the correct address. Then proceed as follows with fault analysis:

Step 1. Ping the IP Address. To begin problem analysis, attempt to “ping” the 8100 as follows:

1. Open a DOS window.
2. Type **ping** and the IP Address of the 8100: **C:\>ping** <8100 IP Address>

   The following message indicates that pinging is in progress:

   Pinging 163.228.48.xx with 32 bytes of data

Step 2. Analyze the Response to the Ping. The type of response will give you some clues about the nature of the problem. Three basic responses are possible:

- **Request timed out** (see paragraph 7-4-1-1)
- **Destination Host Unreachable** (see paragraph 7-4-1-2)
- **Reply from <IP Address>** ...indicating that you have contacted a host, but the address is not that of the 8100 (see paragraph 7-4-1-3).

7-4-1-1. Analyzing the Message “Request timed out”

When you receive this response, you can assume the following: (1) The Service PC Address is valid, (2) the Service PC and IP Address you are pinging have the same network address, and (3) the network card is installed, enabled and configured properly. The most likely causes of this type of response are:

1. **Cause**: You are “directly-connected” to the 8100 with a straight-through cable. You should be using a crossover cable. (Also, the cable could be open.)

   Action: Check for a Link light on the network card or Dongle. If there is no light, you are using the wrong cable or the cable could be open.

2. **Cause**: You have entered leading zeros in an IP Address.

   Action: Correct the address entry. If the IP Address is 163.228.48.63, for example, you cannot enter it as 163.228.48.063. (If you enter a “leading zero” in an octet, note that the octet number will change on your PC display.)

3. **Cause**: The type of Dongle does not match the type of Interface card in the PC.

   Action: If you have a 10/100 network card, make sure you have a 10/100 Dongle.

4. **Cause**: The IMS may be down.

   Action: Check the local panel for error code EC 910.

7-4-1-2. Analyzing the Message “Destination Host Unreachable”

The most likely causes for this type of response are the following:

1. **Cause**: You are not using the same network address for the Service PC and the 8100.

Note

The first three octets (left to right) of the IP Address are called the “network address.” These three octets of the Service PC and 8100 IP addresses must agree, but the fourth octet must differ. For example, if the 8100 address is 163.228.48.xx, the PC address must be 163.228.48.yy.

Action: Run “winipcfg” as described below to verify that the Service PC and 8100 have the same network address. If they don’t, change the PC address to match the network address of the 8100.

Verifying the IP Address:

a. On your Service PC, go to **Start**, then select **Run**.
b. If you are using Windows 95/98, type in **winipcfg** or if you are using Windows NT, type in **ipcfg**.
c. Press Return or click on **OK**.
d. In the **IP Configuration** window, click the Down Arrow and select the type of network card that is currently in your PC. (Don’t confuse the Adapter software that is listed with the listing for the “hardware” card. You need to select the “hardware” card.)
e. Check that the Service PC network address is the same as the network address of the 8100.

Changing the IP Address (if necessary):

a. Right-click on the **Network Neighborhood** icon on Desktop and select **Properties**.
b. In the **Configuration** tab, select the **TCP/IP** listing that is bound to (—>) the network card that is installed in your PC.
c. Select **Properties** for your network card.
d. In the **IP Address** tab, check **Specify an IP Address**.

e. In the **IP Address** field, enter the correct network address for the Service PC.

f. In the **Subnet Mask** field, enter 255 255 255 0

g. Click **OK** twice. Then restart your PC.

2. **Cause**: The network card in your PC has been disabled, is bad, or is not installed correctly.

   Action: Verify that a network card is installed, and that it is not disabled or conflicting with another device, as follows:

   a. Right-click on the **My Computer** icon on Desktop.

   b. Select **Properties**. Then click on the **Device Manager** tab, and click on **Network Adapters**.

   c. Verify that a network card is installed, and verify that there is not a red X or yellow exclamation point over the icon. (The red X or exclamation point indicates that the network card is disabled or conflicting with another device.)

   d. Enable the card (if necessary) by removing the X or exclamation point. (Check in **Properties** to make sure the card is not disabled.)

7-4-1-3. Analyzing a Message that Indicates a "Wrong" Connection

You may receive a reply to the ping indicating a host has been found, but the reply is not coming from the 8100. The most likely causes for this type of response are:

1. **Cause**: You are pinging the Service PC address rather than the 8100 IP Address.

   Action: Check the Local Panel for the correct address. (Use the 8100 IP Address.)

2. **Cause**: Proxy Server is not disabled.

   Action: Disable the Proxy Server as instructed in paragraph 7-4-1.

7-4-2. Failure to Connect to the 8100 Using a Hub

If you are using a hub in your hookup to the 8100, refer to the following possible causes and remedies for a failure to connect:

1. **Cause**: The hub is not powered up.

   Action: Turn on hub power.

2. **Cause**: You are using the wrong cable.

   Action: Check that you are using straight-through cables from PC to hub and hub to 8100 (rather than crossover cables).

3. **Cause**: The cable from PC to hub is plugged into the Uplink port. (The Uplink port should be used only if you are connected into the customer's network.)

   Action: For LINKSYS hubs only: If the Uplink port is not used, use ports 1-5 for the PC and 8100 connections. (If the Uplink port is used, use ports 2-5 for the PC and 8100 connections.)

You can check the Link Lights to try to quickly determine the cause of the problem as follows:

- No Link Light at the PC or hub indicates either a bad cable or the wrong type of cable (not straight-through).
- No Link Light from the hub to the 8100 indicates that you are using the wrong port or the cable is bad or the wrong type (not straight-through).
- If both Link Lights are on, check the Network Neighborhood and Internet Explorer configuration.

7-5. Troubleshooting the Sources of Film Scratches

This procedure provides a logical sequence for locating the causes of film scratches in the machine, starting from the Densitometer Turnaround (Area 5) and working down to the platen (Area 3). The areas where film scratches can most likely occur are the following:

- Densitometer/Turnaround
- Processor Felt Pad
- Processor Film Diverter (Stripper)
- Platen Assembly

A. Preparation for Transporting Film in the Service Mode

1. Set the Service Switch in Service Mode.
2. Open the upper hood and the processor drum cover.

Note

Be familiar with the following operations for controlling film cartridge functions in the service mode.

- To close the film cartridge and open the front door, use the Local Panel **Open Door** key. (The Local Panel will indicate P208, Open Door Fail, because the front door still appears closed to the MCS in service mode.
- To lower the elevator and open the film cartridge, set the Service Switch to the Normal position. The MCS will see the front door as being open. Then set the Service Switch back to the service position. The MCS will see the front door as being closed, and will lower the elevator and close the cartridge. The imager can now transport film.

B. Isolating the General Area where Scratches are Occurring

1. Remove the four attaching screws for the Densitometer Module, and slide the module out far enough to expose the cover for the Densitometer/Exit Sensor (see Figure 7-5).
2. Connect your Service PC and launch MPC via Internet Explorer.
3. Select **Diagnostics**. Then select **Transport Media** and **1 Copy**.
4. As the leading edge of the film comes up into the processor:
   a. Insert a small strip of film under the cover for the Densitometer/Exit Sensor (Figure 7-5), to lift the actuator of the sensor. (This will prevent a Jam in Area 5 error.) Leave the sensor actuated for 10 -15 seconds.
   b. Grasp and remove the film before it contacts the drum (see Figure 7-6).
5. Examine the film for scratches.
   - If the film <u>does not</u> have scratches, the problem is on the exit side of the processor (film diverter, felt pad, cooling plate or densitometer turnaround). See paragraph C.
   - If the film <u>does</u> have scratches, they are probably occurring in the film platen. See paragraph D.

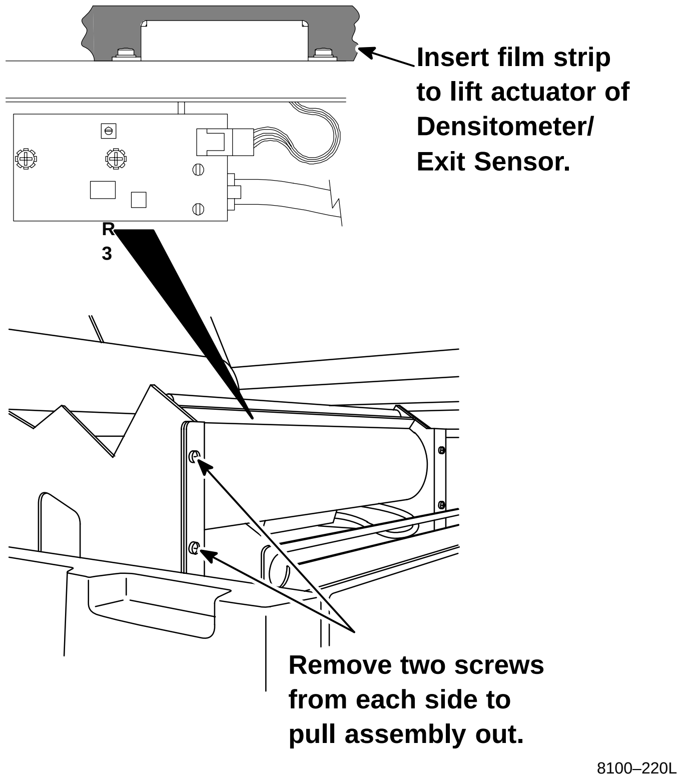


Figure 7-5. Actuating the Densitometer/Exit Sensor

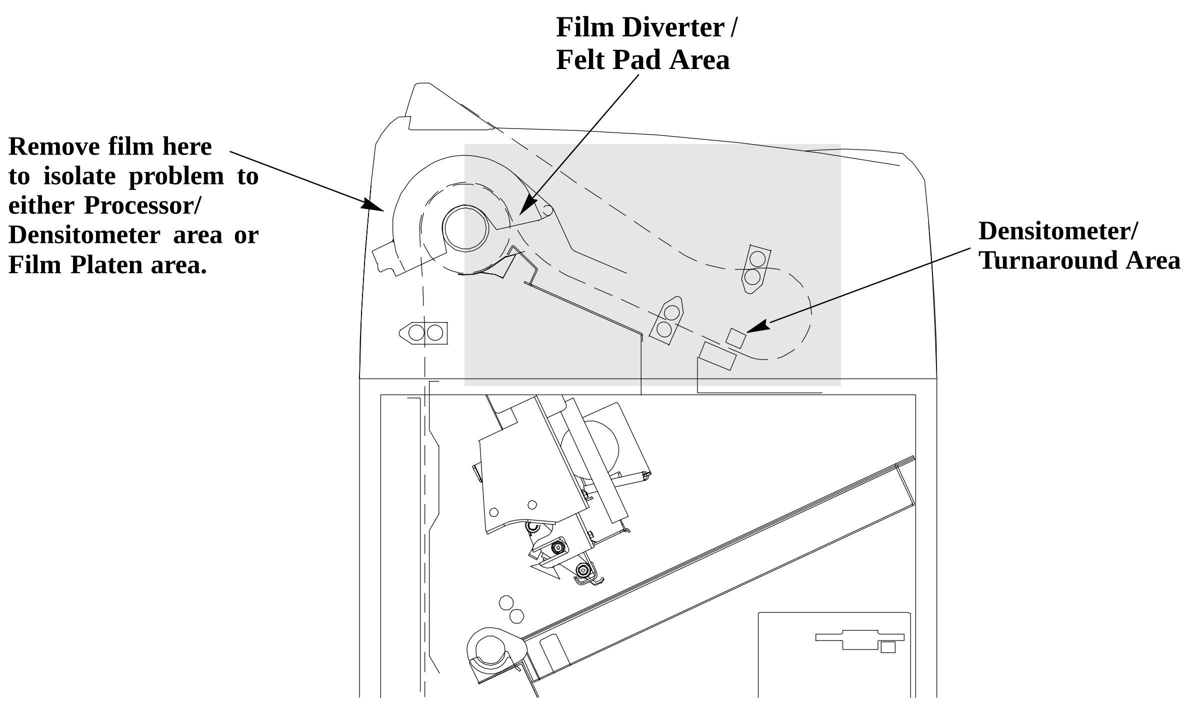


Figure 7-6. Locating the Source of Film Scratching

C. Locating the Cause of Scratching in the Processor/Densitometer Area

1. Close and latch the processor cover.
2. Transport another sheet of film.
3. As the leading edge of the film arrives at the transport rollers just ahead of the densitometer turnaround, use the strip of film to actuate the Densitometer/Exit Sensor (to avoid a film jam error). Leave the sensor actuated for 10-15 seconds.
4. Grasp and remove the film <u>before it enters the turnaround</u>.
5. Examine the film. If it does not have scratches, the problem is in the densitometer/turnaround. If it has scratches the problem is ahead of the densitometer (film diverter, felt pad, etc.). Proceed to the next step to isolate the problem.
6. Lift the processor heat shield to expose the film diverter and felt pad.
7. As the film enters the processor, use the strip of film to actuate the Densitometer/Exit Sensor.

Caution

The film is hot after it passes over the heated drum. Use gloves while grasping and handling it.

8. Grasp and remove the film just after it passes the film diverter. DO NOT allow it to touch the felt pad.
9. Examine the film. If it has scratches, the film diverter is the problem. If it does not have scratches, the problem is the felt pad or possibly the cooling plate.
10. See paragraph E for recommendations for removing the cause of film scratches.

D. Locating the Cause of Scratching in the Film Platen

1. Remove the Imaging Module (paragraph 4-11-1).
2. Inspect the inner guide of the platen for debris or burrs.
3. Use an alcohol pad to wipe down the inner guide.
4. See paragraph E for recommendations for removing the causes of scratches.
5. If you are unable to eliminate the cause of scratching in the platen any other way, replace the inner guide.

E. Guidelines for Removing the Causes of Scratches

The location of the scratches on film is the best guideline for locating the problem area precisely in the machine. Observe the following suggestions:

1. Lightly rub the tips of your fingers over the suspected area in the machine. When you locate a burr or dirt, clean or polish to remove it.
2. Turn several sheets of film upside down in a cartridge and transport them through the machine. (The back side of the film is more abrasive than the emulsion side and sometimes cleans off debris that is hard to locate.

7-6. Local Panel Status Messages

Status Code	Local Panel Message	Explanation
S00	Self Test	The imager is performing its start-up self test. Please wait.
S01	Ready	The imager is idle and available for acquiring and printing images.
S02	Warming = #	The imager is warming up. Please wait for Ready message. (# = the number of minutes until the imager will be ready to operate.)
S04	Stopped	An error condition has caused the imager to stop. Refer to the error message on line 2 of the display.
S11	Printing	The imager is printing an image.
S12	Calibrate	The imager is printing a calibration print.
S13	Contrast	The imager is printing a contrast test print.
S14	Density	The imager is printing a density test print.
S16	Wait	1. The imager is completing films in process before unlatching the front door, or 2. There is an error condition. Refer to line 2 of the display.
S21	Door Open	The front door is open.
S22	Hood Open	The upper hood is open.
S23	Doors Open	Both the front door and upper hood are open.
S24	Crtg Openg	The imager is opening the film cartridge.
S25	Crtg Clsng	The imager is closing the film cartridge.

7-7. Error Code Index

Local Panel	8100 Keypad	V2 Keypad	Log Message	952 ALM#	Description
None	Error–Check Imager	None	P75 Local Panel Err	None	Local panel failure.
P116	Error–Check Imager	Laser Imager Alarm: 60	P116 Pickup Fail	ALM,60	Film pickup failure.
P118	Error–Check Imager	Laser Imager Alarm: 60	P118 Elevator Fail	ALM,60	Elevator did not return home when door was closed.
P119	Error–Check Imager	Laser Imager Alarm: 60	P119 Feed Err Area 2	ALM,60	Film did not reach platen area after pickup.
P121	Error–Check Imager	Laser Imager Alarm: 60	P121 Printer Error	ALM,60	Optics module attenuator error.
P123	Error–Check Imager	Laser Imager Alarm: 60	P123 Printer Error	ALM,60	Optics module spinner is not rotating.
P132	“Cover Open” and “No Cassette”	Supply Magazine is Missing	P132 No Crtg	ALM,12	No film cartridge.
P133	Supply Low	None	P133 Media Low	None	Media low (fewer than 20 sheets.
P134	“Supply Out” and “Cover Open”	Supply Magazine is Empty	P134 Crtg Empty	ALM,10	Film cartridge is empty.
P137	None	None	P137 Open Door Req	None	User has pressed the Open Door Key. (Imager cannot respond. Print cycle is in process.)
P138	Error–Check Imager	Supply Mag. Failed to Close	P138 Press Open 5S	ALM,30	User intervention is required to open the front door.
P139	“Error–Check Imager” and “Cover Open”	Supply Mag. Failed to Open	P139 Bad Barcode	ALM,31	Bad barcode.
P145	“Error–Check Imager” and “Cover Open”	Supply Mag. Failed to Open	P145 Media Type Err	ALM,31	Unsupported media type in the cartridge.

Local Panel	8100 Keypad	V2 Keypad	Log Message	952 ALM#	Description
P146	"Error–Chec k Imager" and "Cover Open"	Supply Mag. Failed to Open	P146 Media Size Err	ALM,31	Wrong media size in the cartridge.
P149	None	None	P149 Wait FilmModel	None	New film model is being calculated. (Informational only.)
P154	Error–Check Imager	Laser Imager Alarm: 60	P154 Disk Problem	ALM,60	Hard disk problem
P160	None	None	P160 Clear All Film	None	Not all films have been cleared from imager.
P164	Media Jam	Printer Feed Error. Re-move Jam.	P164 Jam–Area 3	ALM,21	Film jammed on Platen Film Sensor S6.
P165	Media Jam	Printer Feed Error. Re-move Jam.	P165 Jam–Area 3	ALM,21	Film jammed between platen and processor.
P169	Media Jam	Printer Feed Error. Re-move Jam.	P169 Jam–Area 3	ALM,21	Film Jam in Area 3. (Jam while unloading the platen, sensed by Sensor S6.)
P176	Error- Check Imager	Supply Mag. Failed to Open	P176 Crtg Open Err	ALM,30	Film Cartridge could not be opened.
P177	Error–Check Imager	Supply Mag. Failed to Close	P177 Crtg Close Err	ALM,30	Film cartridge could not be closed. Probable film jam.
P202	None	None	P202 Override Switch	None	Service Override Switch is out (enabled).
P208	Error–Check Imager	None	P208 Door Fail Open	None	Front door did not open when Open Door Key was pressed.
P506	Error–Check Imager	Laser Imager Alarm: 60	P506 Printer Error	ALM,60	Processor RTD timed out while measuring temperature
P509	Error–Check Imager	Laser Imager Alarm: 60	P509 Printer Error	ALM,60	Processor failed to warm up in allotted time.
P512	None	None	P512 Cali-brate Req	None	Calibration print requested.
P513	None	None	P513 Contrast Req	None	Contrast test print requested.

Local Panel	8100 Keypad	V2 Keypad	Log Message	952 ALM#	Description
P514	None	None	P514 Density Req	None	Density test print requested.
P515	Error– Check Imager	Laser Imager Alarm: 60	P515 Calibrate Fail	ALM,60	The calibration print failed.
P542	Media Jam	Printer Feed Error. Re– move Jam.	P542 Jam– Area 4	ALM,21	Jam in Area 4 (on processor drum). Vertical Transport Sensor S8.
P543	Media Jam	Printer Feed Error. Re– move Jam.	P543 Jam– Area 5	ALM,21	Jam in Area 5 (between drum and densitometer). Sensor S9.
P544	Media Jam	Printer Feed Error. Re– move Jam.	P544 Jam– Area 5	ALM,21	Jam in Area 5 (on densitometer). Sensor S9.
P550	None	None	P550 Cleaning Recmd	None	Print count indicates that PM is required.
P551	Error– Check Imager	Laser Imager Alarm: 60	P551 Printer Error	ALM,60	Processor heater did not reach operating temperature.
P554	Error– Check Imager	Laser Imager Alarm: 60	P554 Printer Error	ALM,60	Processor temperature too high.
P601	Error– Check Imager	Laser Imager Alarm: 60	P601 Printer Error	ALM,60	Invalid power monitor offset.
P602	Error– Check Imager	Laser Imager Alarm: 60	P602 Printer Error	ALM,60	Invalid power monitor range.
P603	Error– Check Imager	Laser Imager Alarm: 60	P603 Printer Error	ALM,60	Invalid optical density range.
P604	Error– Check Imager	Laser Imager Alarm: 60	P604 Printer error	ALM,60	Invalid laser dynamic range.
P605	Error– Check Imager	Laser Imager Alarm: 60	P605 Printer Error	ALM,60	Attenuator test failed.
P606	Error– Check Imager	Laser Imager Alarm: 60	P606 Printer Error	ALM,60	Attenuator calibration failed.
P621	None	Laser Imager Alarm: 57	P621 Printer Error	None	Missing film parameter file.

Local Panel	8100 Keypad	V2 Keypad	Log Message	952 ALM#	Description
P622	Error–Check Imager	Laser Imager Alarm: 60	P622 Printer Error	ALM,60	Test of media LUT indicates that it is not monotonic.
P623	None	Laser Imager Alarm: 57	P623 Printer Error	None	Bad transfer function table.
P624	None	Laser Imager Alarm: 60	P624 Calibrate Fail	ALM,60	
P631	None	Laser Imager Alarm: 60	P631 Calibrate Fail	ALM,60	DMin requirement not met on a calibration print.
P632	None	Laser Imager Alarm: 60	P632 Calibrate Fail	ALM,60	DMax requirement not met on a calibration print.
P640	Error–Check Imager	Laser Imager Alarm: 60	P640 Optics Fail Home	ALM,60	Optics scanner failed to return to home position.
P910	Error–Check Imager (or no message)	Laser Imager Alarm: 60	P910 IMS Down	ALM,60	Imager detects no communication from IMS.
P912	Error–Check Imager	None	P912 IMS Xfr Parity	None	IMS data parity error.
P913	Error–Check Imager	None	P913 IMS Xfr Count	None	IMS data transfer count error (overrun or underrun).
P921	Error–Check Imager	Laser Image Alarm: 60	P921 Printer Err	ALM,60	Feeder Board failed its power up test.
P922	Error–Check Imager	Laser Image Alarm: 60	P922 Printer Err	ALM,60	Barcode Reader Board failed its power up test.
P923	Error–Check Imager	Laser Image Alarm: 60	P923 Printer Err	ALM,60	Optics Board failed its power up test.
P924	Error–Check Imager	Laser Image Alarm: 60	P924 Printer Error	ALM,60	Densitometer Board failed its power up test.
None	None	None	None	None	MCS Board failed its power up test.

7-8. Error Code Quick Sheets

7-8-1. EC75: Local Panel Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
None	Error – Check Imager	None	P75 Local Panel Err	None

Summary

The imager has detected a failure in the Local Panel. The imager remains able to print.

Sequence of Events

A hardware failure in the Local Panel has probably occurred.

Phone Fix – Operator Correctable

The operator can cycle system power to try to clear the error, but a service call will probably be required.

On-Site – Technician Correctable

7-8-2. EC116: Pickup Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P116 Pickup Fail	Error – Check Imager	Laser Imager Alarm: 60	P116 Pickup Fail	ALM,60

Summary

The Feeder Board has returned a pickup fail message after being commanded by the MCS Board to pick up film. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

The pickup assembly has failed to pick up film from the cartridge and position it for feed to the platen assembly. There is probably a mechanical failure or a problem in the film cartridge area.

Phone Fix – Operator Correctable

The user should try to print again. The print command will clear the error. If the error recurs, the user should press and hold the Door Open key to open the front door, then look for a cartridge problem or other mechanical problem.

On-Site – Technician Correctable

7-8-3. EC118: Elevator Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P118 Elevator Fail	Error – Check Imager	Laser Imager Alarm: 60	P118 Elevator Fail	ALM,60

Summary

The elevator did not return to the home position after the door was closed. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

After a film cartridge is closed, the Elevator Motor is turned on to raise the cartridge. As the elevator rises, its hub actuator lifts from Elevator Home Sensor S12, and the sensor turns on. This indicates to the software that the elevator is rising. Before a cartridge is opened, the elevator is lowered. When the hub actuator reaches home, it interrupts Sensor S12 and the sensor turns off, indicating to the software that the elevator is home. If S12 does not turn off, the error is declared. Probable causes of the error include a defective sensor or Elevator Motor.

Phone Fix – Operator Correctable

The operator should try to clear the error by cycling power. Most likely a service call will be required.

On-Site – Technician Correctable

7-8-4. EC119: Feed Error

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P119 Feed Err Area 2	Error – Check Imager	Laser Imager Alarm: 60	P119 Feed Err Area 2	ALM,60

Summary

The pickup was successful, but no film showed up at the platen sensor after film feed. Thus the system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

The error is generated when no film is fed to the Platen Sensor after pickup. The pickup and feed operation is retried three times before the error is declared and the imager transitions to “S16 Wait.”

Phone Fix – Operator Correctable

The user must use the 5 second override to open the door, then clear any film jam.

Caution

The user should not attempt to close the cartridge while this error state is in effect. If a jammed film is caught by the rollback as the cartridge is closed, it will damage the film guard.

On-Site – Technician Correctable

7-8-5. 121: Attenuator Error

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P121 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P121 Printer Error	ALM,60

Summary

The imager was unable to move the attenuator to the requested position after multiple attempts. Thus the system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

The Optics Attenuator Motor (Step 3), under control of the MCS Board, is stepped to set the attenuator at the position that will provide the desired image density. The motor can step the attenuator to 650 different positions (home, or zero, to 650).

Phone Fix – Operator Correctable

The operator should try to clear the error by cycling power. Most likely a service call will be required.

On-Site – Technician Correctable

7-8-6. EC123: Spinner Error

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P123 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P123 Printer Error	ALM,60

Summary

The optics module spinner is not rotating as expected. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

Phone Fix – Operator Correctable

The user should try to clear the error by cycling power.

On-Site – Technician Correctable

7-8-7. EC132: No Supply Cartridge

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P132 No Crtg	“Cover Open” and “No Cassette”	Supply Magazine is Missing	P132 No Crtg	ALM,12

Summary

The presence of a cartridge has not been detected by Cartridge Present Sensor S1. Thus either a cartridge is not loaded or the sensor is defective. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

When a cartridge is inserted, it contacts the flag actuator of Cartridge Present Sensor S1. causing the sensor to conduct. The sensor signal indicates to the MCS micro system that a cartridge is installed. A defective sensor will result in a false error indication.

Phone Fix – Operator Correctable

The operator should open the front door and load another cartridge to verify the error.

On-Site – Technician Correctable

7-8-8. EC133: Media Low

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P133 Media Low	Supply Low	None	P133 Media Low	None

Summary

The system has detected that the cartridge contains fewer than 20 sheets of film.

Sequence of Events

When a full cartridge of 125 sheets is loaded, the system sets the film count at 125, and counts down with each sheet printed. When the count reaches 19, the “supply low” message is generated.

Phone Fix – Operator Correctable

No action required.

On-Site – Technician Correctable

If the system accidentally flags a cartridge as being out of film (“supply out”) or low on film (“supply low”), the customer can still use the cartridge, but not until 10 film cartridges have been used. Advise the customer to set the cartridge aside with a note indicating that it can be inserted into the machine after 10 cart ridges have been used.

7-8-9. EC134: Supply Cartridge Empty

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P134 Crtg Empty	“Supply Out” and “Cover Open”	Supply Magazine is Empty	P134 Crtg Empty	ALM,10

Summary

The supply cartridge is out of film. When this occurs, the MCS immediately indicates a media out condition to the IMS and begins to close the cartridge. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

When the pickup carriage is driven down by the pickup motor to contact the film, the following sequence occurs: Film Surface Sensor S4 contacts the bottom of the carriage (when it is empty of film) and turns on, but Film Out Sensor S5 does not actuate because of the hole in the bottom of the empty cartridge. This sequence signals to the MCS an out-of-film condition. The MCS stops the pickup motor, then returns the pickup carriage to home.

Phone Fix – Operator Correctable

The operator must open the front door, remove the cartridge and install a new cartridge. The error will clear automatically.

On-Site – Technician Correctable

7-8-10. EC137: Open Door Requested

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P137 Open Door Req	None	None	P137 Open Door Req	None

Summary

The user has pressed the Open Door Key, but the imager is printing and will not allow the door to open. The printer is unable to start another print cycle. Otherwise, the system can operate as normal (acquiring, queuing prints, completing processing in progress, etc.).

Sequence of Events

The system will not allow the user to open the front door while film is in process in the bottom of the imager.

Phone Fix – Operator Correctable

The operator must wait until the Local Panel displays “S16 Wait” (film is out of the platen) and then S25 Crtg Clsng (film is in the top of the imager). At this point, the front door will open.

On-Site – Technician Correctable

7-8-11. EC138: User Intervention Required to Open Door

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P138 Press Opn 5S	Error – Check Imager	Supply Magazine Failed to Close	P138 Press Open 5S	ALM,30

Summary

The imager is unable to open the front door because the supply cartridge would not close or the elevator would not lower. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

When the user keys in the command to open the front door, the system software attempts to close the cartridge. If this fails, the attempt is repeated several times. If the cartridge will not close, the error is declared.

When a cartridge is inserted and the door is closed, the software attempts to lower the elevator to position the cartridge for opening and closing. If this fails, the attempt is repeated several times. If the elevator will not lower, the error is declared.

Phone Fix – Operator Correctable

The operator should press and hold in the Open Door key for 5 seconds to override the cartridge close operation (which is hung up). Then the operator should clear the jam or other error condition, if possible, manually close the cartridge, and close the front door.

Caution

The user should not attempt to close the cartridge while this error state is in effect. If a jammed film is caught by the rollback as the cartridge is closed, it will damage the film guard.

On-Site – Technician Correctable

7-8-12. EC139: Bad Barcode

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P139 Bad Barcode	“Error – Check Imager” and “Cover Open”	Supply Magazine Failed to Open	P139 Bad Barcode	ALM,31

Summary

The imager is unable to read the barcode on the supply cartridge. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

If the imager cannot read the bar code on a new cartridge, it attempts the read a second time. If unsuccessful again, it declares the error and closes the cartridge.

Phone Fix – Operator Correctable

The operator should open the front door, remove the old cartridge, insert a new cartridge, and close the door. The error will clear. The operator should then examine the bar code on the removed cartridge for defects.

On-Site – Technician Correctable

7-8-13. EC145: Unsupported Media Type

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P145 Media Type Err	“Error – Check Imager” and “Cover Open”	Supply Magazine Failed to Open	P145 Media Type Err	ALM,31

Summary

The barcode data indicates that the type of media in the cartridge is incompatible with the imager. (The user may have loaded media for a 969 laser imager, or other incompatible system.) The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

Whenever a new cartridge is loaded, the software reads the barcode on the bottom of the cartridge to identify the media type, size, etc.

Phone Fix – Operator Correctable

The operator must replace the cartridge with one containing compatible media.

On-Site – Technician Correctable

7-8-14. EC146: Wrong Media Size

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P146 Media Size Err	“Error – Check Imager” and “Cover Open”	Supply Magazine Failed to Open	P146 Media Size Err	ALM,31

Summary

The barcode data indicates that the size of the media in the cartridge is incompatible with the imager. (The user may have loaded media for an 8500 laser imager, or other incompatible system.) The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

Whenever a new cartridge is loaded, the software reads the barcode on the bottom of the cartridge to identify the media type, size, etc.

Phone Fix – Operator Correctable

The operator must replace the cartridge with one containing compatible media.

On-Site – Technician Correctable

7-8-15. EC149: Building Film Model

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P149 Wait FilmModel	None	None	P149 Wait FilmModel	None

Summary

This message is informational only. Calculations are in progress to build a new film model and media LUT.

Sequence of Events

When a cartridge is opened by the imager, the barcode information is read and sent to the IMS. The cartridge manager software in the IMS determines the film model information and sends it to the MCS, which calculates a new film model and media LUT. The P149 message is displayed while the calculations are in progress.

Phone Fix – Operator Correctable

No action required.

On-Site – Technician Correctable

7-8-16. EC154: Hard Disk Problem

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P154 Disk Problem	Error – Check Imager	Laser Imager Alarm: 60	P154 Disk Problem	ALM,60

Summary

The imager has detected a problem with the hard disk. The system is unable to print and cannot function as normal (acquiring, queuing prints,etc.).

Sequence of Events

This error can be generated either by hardware or software and should be considered serious. Some possible causes (and suggested remedies) are:

- Disk full– (Remove extraneous files.)
- File system corrupted– (Reformat and repopulate disk.)
- Disk hardware failure– (Replace disk drive, reformat, and repopulate.)

For software failures, the LOG KERNEL file is accessible for service to determine the source of the error.

Phone Fix – Operator Correctable

The operator should cycle system power. If this does not clear the error, a service call will be required.

On-Site – Technician Correctable

7-8-17. EC160: Jam Clearing is Not Complete

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P160 Clear All Film	None	None	P160 Clear All Film	None

Summary

This message is displayed during a jam situation when there are still films in the imager that need to be cleared.

Sequence of Events

This message displays when the operator has cleared jammed films from the top of the imager, but there are still films to clear in the bottom of the imager. The state “S16 Wait” will remain in effect until both the top hood and the front door have been opened and closed (indicating to the system that all of the film has been cleared).

Phone Fix – Operator Correctable

Clear films from both the top and bottom of the imager.

On-Site – Technician Correctable

No action required.

7-8-18. EC164: Jam Loading Exposure Platen

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P164 Jam–Area 3	Media Jam	Printer Feed Error. Remove Jammed Film	P164 Jam–Area 3	ALM,21

Summary

Film is jammed at the entrance to the exposure (platen) area. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.). Removing the jam clears the error when the front door is closed.

Sequence of Events

When the film is picked up from the cartridge and placed in the feed rollers, it is driven to the platen. When it enters the platen, it turns on Platen Film Sensor S6, and the platen feed rollers drive it down into exposure position in the platen. As the film drives to exposure position, it exits Sensor S6, and the sensor turns off, indicating to the system software that the film is ready for exposure. If Sensor S6 does not turn off within 5 seconds after turn-on, the jam error (jam entering Area 3) is declared. (5 seconds = 17 inches of film travel at 4 inches per second, plus tolerance.)

Phone Fix – Operator Correctable

The operator can clear the error by opening the front door, clearing the jammed film from the entrance to the platen area, and closing the door.

On-Site – Technician Correctable

7-8-19. EC165: Jam at Transport

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P165 Jam–Area 3	Media Jam	Printer Feed Error. Remove Jammed Film	P165 Jam–Area 3	ALM,21

Summary

The film has jammed between the platen and the processor. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.). Removing the jam clears the error when the front door is closed.

Sequence of Events

As the film begins to drive out of the platen, Platen Sensor S6 turns on. Within 3.6 seconds Vertical Transport Sensor S8 should should detect the leading edge of the film and turn on, indicating that film is moving up through the vertical transport area. (3.6 seconds = 14.5 inches of film travel at 4 inches per second, plus tolerance.) Sensor S6 should turn off within 10 seconds after S8 turns on, indicating that the film has passed out of the exposure area. If S8 does not turn on or S6 does not turn off as expected, a jam has occurred in the vertical transport.

Phone Fix – Operator Correctable

The operator can clear the error by opening the front door, clearing the jam from the vertical transport area, and closing the door.

On-Site – Technician Correctable

7-8-20. EC169: Jam Unloading Exposure Platen

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P169 Jam–Area 3	Media Jam	Printer Feed Error. Remove Jammed Film	P169 Jam–Area 3	ALM,21

Summary

Film has jammed exiting the exposure (platen) area. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

As the platen rollers drive the film out of the platen after exposure, it enters Platen Sensor S6, and the sensor turns on indicating to the system software that the film is moving out of the platen. If Sensor S6 does not turn on within 4 seconds after the beginning of film drive, the jam error (jam exiting Area 3) is declared. (3.6 seconds = 14.5 inches of film travel at 4 inches per second, plus tolerance.)

Phone Fix – Operator Correctable

The operator must open the front door, clear the film jam, and close the door to clear the error.

On-Site – Technician Correctable

7-8-21. EC176: Supply Cartridge Could Not Be Opened

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P176 Crtg Open Err	Error – Check Imager	Supply Mag. Failed to Open	P176 Crtg Open Err	ALM,30

Summary

The imager could not open the film cartridge. The system is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

The imager could not open the cartridge lid so that film could be picked up. The problem could be caused by a faulty Rollback Motor or Sensor. Or possibly the operator inserted the film cartridge backward.

Phone Fix – Operator Correctable

The operator must open the front door and verify that the cartridge is inserted properly, then close the door and try again.

On-Site – Technician Correctable

7-8-22. EC177: Supply Cartridge Could Not Be Closed

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P177 Crtg Close Err (Alternates with P138)	Error – Check Imager	Supply Magazine Failed to Close	P177 Crtg Close Err	ALM,30

Summary

The imager could not close the supply cartridge and is unable to print. Otherwise the system can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

Very likely a jam has occurred in Area 1 of the imager, preventing the cover from closing. The jam will have to be cleared.

Phone Fix – Operator Correctable

The operator can open the front door by pressing and holding in the Open Door Key for 5 seconds. The operator should then clear the jammed film and manually close the cartridge. Once the door is closed, the error will clear. The top films in the cartridge will be fogged.

Caution

The user should not attempt to close the cartridge while this error state is in effect. If a jammed film is caught by the rollback as the cartridge is closed, it will damage the film guard.

On-Site – Technician Correctable

7-8-23. EC202: Service Override Switch Out

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P202 Override Switch	None	None	P202 Override Switch	None

Summary

The Service Override Switch has been enabled. When this switch is enabled, the system does not recognize that the rear panel is removed or the front door is opened. Thus the imager will transport film, since motors and sensors will operate. However the laser is powered off.

Sequence of Events

Motors and sensors will operate, since dc power (both hazard and nonhazard) is available. But Relay K2 disables $\pm$ 12 volt dc laser drive power.

Phone Fix – Operator Correctable

No action required. To return the system to normal operation, the Service Override Switch must be disabled, the rear panel replaced, and the front door closed.

On-Site – Technician Correctable

7-8-24. EC208: Door Open Fail

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P208 Door Fail Open	Error – Check Imager	None	P208 Door Fail Open	None

Summary

The front door failed to open after the cartridge closed. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.). After the front door is manually opened and closed, the system will resume normal operation.

Sequence of Events

The error occurs when the user presses the Open Door Key on the Local Panel to open the door, but the door fails to open.

Phone Fix – Operator Correctable

The operator must manually open the door to clear the error.

On-Site – Technician Correctable

7-8-25. EC506: Processor Communication Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P506 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P506 Printer Error	ALM,60

Summary

The Processor RTD timed out while measuring processor temperature and communicating it to the MCS. The system is unable to print. Otherwise it can still acquire and queue prints.

Sequence of Events

Phone Fix – Operator Correctable

The user can attempt to clear the error by cycling power. However, a service call will likely be required.

On-Site – Technician Correctable

7-8-26. EC509: Processor Warmup Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P509 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P509 Printer Error	ALM,60

Summary

The processor failed to warm up in the programmed time. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

Phone Fix – Operator Correctable

The operator can cycle power to try to clear the error, but very likely a service call will be required.

On-Site – Technician Correctable

7-8-27. EC512: Calibration Request

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P512 Calibrate Req (flashes)	None	None	P512 Calibrate Req	None

Summary

A calibration print has been requested either via the Local Panel or internally by the Greyscale Manager. The message is flashed briefly on the Local Panel, and the status line displays “S12 Calibrate” until the calibration passes or fails.

Sequence of Events

When the calibration request occurs, the system automatically queues a calibration print. The process is transparent to the user (except for the notice on the Local Panel). The user can operate as normal, acquiring and queuing prints, completing processing in progress, etc.

Phone Fix – Operator Correctable

None required.

On-Site – Technician Correctable

7-8-28. EC513: Contrast Request

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P513 Contrast Req (flashes)	None	None	P513 Contrast Req	None

Summary

A contrast test print has been requested. The message is flashed briefly on the Local Panel, and the status line displays “S13 Contrast” until the contrast test film exits the imager.

Sequence of Events

When the contrast test request occurs, the system automatically queues a contrast test print. The process is transparent to the user (except for the notice on the Local Panel). The user can operate as normal, acquiring and queuing prints, completing processing in progress, etc.

Phone Fix – Operator Correctable

None required.

On-Site – Technician Correctable

7-8-29. EC514: Density Request

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P514 Density Req	None	None	P514 Density Req	None

Summary

A density test print has been requested. The message is flashed briefly on the Local Panel, and the status line displays “S14 Density” until the density test film exits the imager.

Sequence of Events

When the density test request occurs, the system automatically queues a density test print. The process is transparent to the user (except for the notice on the Local Panel). The user can operate as normal, acquiring and queuing prints, completing processing in progress, etc.

Phone Fix – Operator Correctable

None required.

On-Site – Technician Correctable

7-8-30. EC515: Calibration Print Failed

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P515 Calibrate Fail	Error– Check imager	Laser Imager Alarm: 60	P515 Calibrate Fail	ALM,60

Summary

The calibration print failed. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

The error occurs during the process of building the film model, when wedge data fails one of the following detailed checks of monotonicity:

- The three step wedge values used to calculate the Dmax density are not monotonic, causing an error in the calibration calculations.
- Dmin is not monotonic. (The Dmin is measured at the last monotonic step. Some non-monotonic behavior is allowable around the Dmin, as long as it is not too far up the curve, pushing the last monotonic value above the allowable Dmin.)

Phone Fix – Operator Correctable

The operator should try a different film cartridge. (The film may be defective.) If the problem recurs with the new cartridge, a service call should be placed.

On-Site – Technician Correctable

1. The technician should first check for fogged or old film.
2. Then check the MCS Log for a Level 6 message. Look for the 26 density readings from the calibration film:

   Raw Wedge 0:1 3.3980
   1:2 3.3290
   etc.
3. Also check the GSM Log for a Level 6 message:

   StepWedge: wedge 0: 0.212523

If any of the density readings is negative, the densitometer is out of adjustment. (Refer to paragraph 3-5).

The following MCS Log message indicates that there is no communication between the MCS and the densitometer: genericGetStatus: Densi showed error 0x60002. (Refer to EC924.)

7-8-31. EC542: Jam at Processor

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P542 Jam–Area 4	Media Jam	Printer Feed Error. Remove Jammed Film	P542 Jam–Area 4	ALM,21

Summary

The film is jammed on the processor drum. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.).

The processor shuts down when the error occurs. Any imaging in process is completed and all films below the drum are held in place until the jam is cleared. After the jammed film is removed and the top hood is closed, the error is reset and the processor is restarted. The processor may need to warm up before printing will continue. When the processor is warm, the films below the processor are processed as usual.

Sequence of Events

After exposure the film is driven from the platen by the Platen Roller Motor through Platen Film Sensor S6, continuing up through the vertical transport area. At the top of the vertical transport area, the film passes through Vertical Transport Sensor S8, turning it on. If the sensor does not turn off within 47 seconds, indicating that the film has passed entirely through the sensor, P542 is declared. The error signals that the film has jammed on the processor drum. (47 seconds = 17 inches of film travel at 0.4 inches per second, plus tolerance.)

Phone Fix – Operator Correctable

The operator must open the top hood and clear the jam from the processor area. (WARNING! The processor is hot.). When the hood is closed the error will clear.

On-Site – Technician Correctable

7-8-32. EC543: Jam at Densitometer

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P543 Jam–Area 5	Media Jam	Printer Feed Error. Remove Jammed Film	P543 Jam–Area 5	ALM,21

Summary

The film is jammed between the processor drum and the densitometer. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.).

The processor shuts down when the error occurs. Any imaging in process is completed and all films below the drum are held in place until the jam is cleared. After the jammed film is removed and the top hood is closed, the error is reset and the processor is restarted. The processor may need to warm up before printing will continue. When the processor is warm, the films below the processor are processed as usual.

Sequence of Events

The developed film is driven by transport rollers from the drum to the densitometer. As it enters the densitometer it contacts the actuator of Densitometer/Exit Sensor S9, turning the sensor on. If S9 does not turn on within 25 seconds after Vertical Transport Sensor S8 turned off, error P543 is declared, indicating that film has jammed between the drum and the densitometer.

Phone Fix – Operator Correctable

The operator must open the top hood and clear the jammed film. (WARNING! The processor is hot.) When the top hood is closed, the error is cleared.

On-Site – Technician Correctable

7-8-33. EC544: Jam at Exit

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P544 Jam–Area 5	Media Jam	Printer Feed Error. Remove Jammed Film	P544 Jam–Area 5	ALM,21

Summary

The film is jammed between the densitometer and the exit tray. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.).

The processor shuts down when the error occurs. Any imaging in process is completed and any films below the drum are held in place until the jam is cleared. After the jammed film is removed and the top hood is closed, the error is reset and the processor is restarted. The processor may need to warm up before printing will continue. When the processor is warm, any films below the processor are processed as usual.

Sequence of Events

The developed film from the drum turns on Processor/Exit Sensor S9 as it enters the densitometer. If Sensor S9 does not turn off within 50 seconds, indicating that the film has passed through the sensor, error P544 is declared. This error signals that the film has jammed in the densitometer before reaching the exit tray.

Phone Fix – Operator Correctable

The operator must open the top hood and clear the jammed film. (WARNING! The processor is hot.) When the top hood is closed, the error is cleared.

On-Site – Technician Correctable

7-8-34. EC550: Preventive Maintenance and Cleaning Recommended

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P550 Cleaning Recmd	None	None	P550 Cleaning Recmd	None

Summary

The film sheet count indicates that preventive maintenance is required.

Sequence of Events

Phone Fix – Operator Correctable

Either a customer technician or a Kodak technician should perform periodic maintenance as described in the service manual. After maintenance, “prints until PM” should be reset via MPC.

On-Site – Technician Correctable

7-8-35. EC551: Processor Drum Heater Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P551 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P551 Printer Error	ALM,60

Summary

The heater has been turned on, but the expected temperature rise did not occur.

Sequence of Events

When power is applied to the imager and the top hood is closed, 120 volts ac is applied to the processor heater through a relay on the Processor Interface Board, under control of the Master CPU on the MCS Board. The Processor RTD senses changes in heater temperature and reports them to the Master CPU. Failure of the heater to warm up could be caused by any of a number of problems, e.g., open heater, open thermal fuse, open RTD, defective relay on the Processor Interface Board, etc.

Phone Fix – Operator Correctable

A service call is required.

On-Site – Technician Correctable

Make sure the RTD cable is plugged into the MCS Board (J17 on the upper right corner of the board). Also check that calibration jumper JP7 is plugged into the NORM position on the board..

7-8-36. EC554: Over Temperature Error

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P554 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P554 Printer Error	ALM,60

Summary

The drum temperature is too high. This error shuts down the processor heater. The system is unable to print. Otherwise it can operate as normal (acquiring, queueing prints, completing processing, etc.).

Sequence of Events

When power is applied to the imager and the top hood is closed, 120 volts ac is applied to the processor heater through a relay on the Processor Interface Board, under control of the Master CPU on the MCS Board. The Processor RTD senses changes in heater temperature and reports them to the Master CPU. Failure to control temperature probably indicates that the RTD is open, there is a short in the drum wiring, or a control circuit on the MCS Board is defective.

Phone Fix – Operator Correctable

The operator can try to clear the error by cycling power. If the error persists, a service call is required.

On-Site – Technician Correctable

Check for a possible short in heater wiring as follows:

1. Power down and open the upper hood.
2. Remove the three screws from the end cap of the heater. (Or remove two screws and pivot the end cap out of the way.)
3. Check the thermal breaker button inside the drum. If it has popped out, use a screwdriver to pop it back in.
4. Apply power and check to see if the breaker button pops back out. If it does, there is probably a short in the heater wiring, and the drum should be replaced.

7-8-37. EC601: Invalid Power Monitor Offset

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P601 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P601 Printer Error	ALM,60

Summary

Optics calibration and diagnostics detected a power monitor offset that was outside the predefined valid range (1 to 50). The imager is unable to print. The user can still acquire normally, but new print jobs will not be initiated. Previous films will be completed.

Sequence of Events

Optics calibration and diagnostics are performed at power up and before every calibration print. During this process the attenuator is calibrated and laser power is checked and calibrated. The first check in the sequence is for power monitor offset, which measures the output of the beam power monitor with the laser turned off. This value is used as an offset correction in later checks and calibration. If power monitor offset is outside set limits, the P601 error is declared. The error is very likely in the optics module, but could be on the MCS Board.

Phone Fix – Operator Correctable

The user should make sure that the Service Override Switch is in user mode and that all interlocks are closed (top hood down, front door closed and back panel installed). A service call very likely will be required.

On-Site – Technician Correctable

7-8-38. EC602: Invalid Power Monitor Range with Attenuator Open

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P602 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P602 Printer Error	ALM,60

Summary

Optics calibration and diagnostics detected that a power monitor reading with the attenuator wide open was outside the predefined valid range. The measured laser power is either too high or too low. The imager is unable to print. The user can still acquire normally, but new print jobs will not be initiated. Previous films will be completed.

Sequence of Events

Optics calibration and diagnostics are performed at power up and before every calibration print. During this process the attenuator is calibrated and laser power is checked and calibrated. At the beginning of the sequence, the power monitor offset value is measured, and then the range of the power monitor is checked with the attenuator wide open (no attenuation). (Power monitor offset is subtracted from this value.) If the range value is outside set limits, error P602 is declared. The problem is probably in the optics module, but could possibly be on the MCS Board.

Phone Fix – Operator Correctable

The user should make sure that the Service Override Switch is in user mode and that all interlocks are closed (top hood down, front door closed and back panel installed). A service call very likely will be required.

On-Site – Technician Correctable

7-8-39. EC603: Invalid Attenuator Optical Density Range

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P603 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P603 Printer Error	ALM,60

Summary

Optics calibration and diagnostics detected that calculated attenuator optical density range was outside the predefined valid range. The imager is unable to print. The user can still acquire normally, but new print jobs will not be initiated. Previous films will be completed.

Sequence of Events

Optics calibration and diagnostics are performed at power up and before every calibration print. During this process the attenuator is calibrated and laser power is checked and calibrated. At the beginning of the sequence, power monitor offset is measured and beam power monitor range is checked. Then the attenuator is calibrated. After this, a range of density is checked as a function of attenuator setting. If this range is out of specification, error P603 is declared. The problem is probably in the optics module.

Phone Fix – Operator Correctable

The user should make sure that the Service Override Switch is in user mode and that all interlocks are closed (top hood down, front door closed and back panel installed). A service call very likely will be required.

On-Site – Technician Correctable

Replace the optics module.

7-8-40. EC604: Invalid Laser Dynamic Range

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P604 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P604 Printer Error	ALM,60

Summary

Optics calibration and diagnostics detected that the calculated laser dynamic range was outside the predefined valid range. The imager is unable to print. The user can still acquire normally, but new print jobs will not be initiated. Previous films will be completed.

Sequence of Events

Optics calibration and diagnostics are performed at power up and before every calibration print. During this process the attenuator is calibrated and laser power is checked and calibrated. During laser checks, the laser dynamic range is tested. Dynamic range is defined as the ratio of the power monitor reading at maximum laser power to the reading at minimum laser power. If this ratio is outside the set limit, error P604 is declared. The problem is probably in the optics module.

Phone Fix – Operator Correctable

The user should make sure that the Service Override Switch is in user mode and that all interlocks are closed (top hood down, front door closed and back panel installed). A service call very likely will be required.

On-Site – Technician Correctable

Perform the laser dynamic range adjustment (see paragraph 3-6). If the adjustment fails, replace the optics module.

7-8-41. EC605: Attenuator Test 1 Failed

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P605 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P605 Printer Error	ALM,60

Summary

Attenuator Test 1 failed during optics calibration and diagnostics. The imager is unable to print. The user can still acquire normally, but new print jobs will not be initiated. Previous films will be completed.

Sequence of Events

Optics calibration and diagnostics are performed at power up and before every calibration print. During this process the attenuator is calibrated and laser power is checked and calibrated. During laser diagnostics, maximum laser power is applied with the attenuator at a minimum setting. If the beam power monitor is saturated, the attenuator is adjusted to add density and lower the power monitor reading. If after adjustment, the power monitor reading is still too high, a P605 error is declared. The problem is with the attenuator in the optics module.

Phone Fix – Operator Correctable

The user should make sure that the Service Override Switch is in user mode and that all interlocks are closed (top hood down, front door closed and back panel installed). A service call very likely will be required.

On-Site – Technician Correctable

Replace the optics module.

7-8-42. EC606: Attenuator Calibration Failed

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P606 Printer Error	Error – Check Imager	Laser Imager Alarm: 60	P606 Printer Error	ALM,60

Summary

Attenuator calibration failed during optics calibration and diagnostics. The power monitor readings were not monotonic. The imager is unable to print. The user can still acquire normally, but new print jobs will not be initiated. Previous films will be completed.

Sequence of Events

Optics calibration and diagnostics are performed at power up and before every calibration print. During this process the attenuator is calibrated and laser power is checked and calibrated. At the beginning of the sequence, power monitor offset is measured and beam power monitor range is checked. Then the attenuator is calibrated. Calibration consists of measuring attenuator optical density using power monitor readings taken at 21 different attenuator settings. This should create a smooth, monotonic curve of attenuator setting vs. optical density. If spikes occur on the curve, error P606 is declared. This may indicate scratches or dirt in the optics.

Phone Fix – Operator Correctable

The user should make sure that the Service Override Switch is in user mode and that all interlocks are closed (top hood down, front door closed and back panel installed). A service call very likely will be required.

On-Site – Technician Correctable

Replace the optics module.

7-8-43. EC621: Missing Film Parameter File

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P621 Printer Error	None	Laser Imager Alarm: 60	P621 Printer Error	None

Summary

Gray Scale Manager (GSM) detected a missing film parameter file during its attempt to load the densitometer correction factors. The user can still acquire normally, but the densitometer correction factors defined for this type of film may not be used, and GSM may not function properly.

Sequence of Events

This error is detected when the FilmParameter software tries to load the densitometer correction factors for the film type into the MIB and in the process detects a missing file. When this occurs, the default values of Version 2 blue film will be used in place of the missing file.

Phone Fix – Operator Correctable

A service call is required.

On-Site – Technician Correctable

Download a new FilmParameter file into the IMS via the MPC.

7-8-44. EC622: Media LUT Non-Monotonic

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P622 Printer Error	Error– Check Imager	Laser Imager Alarm: 60	P622 Printer Error	ALM,60

Summary

The test of the Media LUT failed.

Sequence of Events

At the start of each print cycle the media LUT is checked to verify that it is still monotonic. If the test fails, the error is issued and film cannot be printed.

Note

This error will occur after a Laser Dynamic Range Adjustment is performed if a calibration print is not run before any other print.

Phone Fix – Operator Correctable

The user should try to clear the error by requesting a calibration from the Local Panel.

On-Site – Technician Correctable

The following information is from Tech Bulletin 1-8/89, Mandatory Inspection and Replacement of all Suspect MCS Boards.

Problem: P622 Errors (Media LUT Non-Monotonic)

Cause: Defective parts manufactured by Alliance and installed in MCS Board locations U6, U8, U18, and U22.

Solution: Inspect all MCS Boards currently in custody, spare parts centers, and installed in machines. Return the boards for rework if they contain Alliance chips in any of the locations identified above. U6 and U8 are located in the lower left corner of the MCS board, just above JP3. U18 and U22 are located in the lower right corner of the board, just above JP6. (See the illustration below.) (MCS Boards that contain parts manufactured by Winbond in these locations or parts manufactured by Alliance in any other area on the board do not exhibit P622 errors.)

7-8-45. EC623: Bad or Missing Transfer Function

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P623 Printer Error	None	Laser Imager Alarm: 57	P623 Printer Error	None

Summary

The Gray Scale Manager detected a bad or missing transfer function during its attempt to create a contrast table. A bad transfer function table (TFT) contains values outside the range 0 to 4095. The user can still acquire normally, but new print jobs using the requested table will not be initiated.

Sequence of Events

The error is detected when the TFT Manager software creates or reads tables. The software verifies that the transfer function contains values in the range of 0 to 4095. The error occurs when a new transfer function is built that does not meet the specifications for building such tables. The error can occur also when the software attempts to read a TFT and determines that all or part of the table is missing.

Phone Fix – Operator Correctable

A service call is required.

On-Site – Technician Correctable

The technician must download new TFTs into the MCS via the MPC.

7-8-46. EC624: Bad Densitometer Data

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P624 Calibrate Fail	None	Laser Imager Alarm: 60	P624 Calibrate Fail	ALM,60

Summary

The densitometer data from a calibration print is not increasing monotonically. The user can still acquire normally, but new print jobs will not be initiated.

Sequence of Events

A calibration print has been run, and an initial analysis of the wedge density data shows that density does not increase monotonically.

Phone Fix – Operator Correctable

The operator should try a different film cartridge. (The film may be defective.) If the problem recurs with the new cartridge, a service call should be placed.

On-Site – Technician Correctable

The technician should first check for fogged or old film.

7-8-47. EC631: Dmin Not Met

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P631 Calibrate Fail	None	Laser Imager Alarm: 60	P631 Calibrate Fail	ALM,60

Summary

The Dmin requirement was not met on a calibration print. The user can still acquire normally, but new print jobs will not be initiated.

Sequence of Events

The error is detected when the Gray Scale Manager software receives the densitometer readings from a calibration sheet that has just been processed. An error is declared if the calibration sheet does not have a wedge with the required Dmin value.

Phone Fix – Operator Correctable

The operator should try a different film cartridge. If the problem recurs with the new cartridge, a service call should be placed.

On-Site – Technician Correctable

The technician should check for defective film and check processor temperature.

7-8-48. EC632: Dmax Not Met

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P632 Calibrate Fail	None	Laser Imager Alarm: 60	P632 Calibrate Fail	ALM,60

Summary

The Dmax requirement was not met on a calibration print. The user can still acquire normally, but new print jobs will not be initiated.

Sequence of Events

The error is detected when the Gray Scale Manager software receives the densitometer readings from a calibration sheet that has just been processed. An error is declared if the calibration sheet does not have a wedge with the required Dmax value.

Phone Fix – Operator Correctable

The operator should try a different film cartridge. If the problem recurs with the new cartridge, a service call should be placed.

On-Site – Technician Correctable

The technician should check for defective film and check processor temperature.

7-8-49. EC640: Optics Home Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P640 Optics Fail Home	Error – Check Imager	Laser Imager Alarm: 60	P640 Optics Fail Home	ALM,60

Summary

The scanner did not return to the home position after a scan operation. The printer is unable to print. Otherwise, the system can operate as normal (acquiring, queuing prints, completing processing in progress, etc.).

Sequence of Events

The system returns the scanner to its home position after every scan operation by activating the Optics Translation Motor. When it reaches the home position, Optics Home Sensor S7 is blocked and turns off, indicating to the Master CPU on the MCS Board that the scanner is home. If Sensor S7 does not go low, the error is declared. Possible causes of the error include an IMS boot failure, a defective Sensor S7, or a defective Optics Translation Motor. Another possible cause is interference from cables or other objects which prevents the optics module from reaching home position properly.

Phone Fix – Operator Correctable

The operator can try to clear the error by cycling power. However, the error will very likely generate a service call.

On-Site – Technician Correctable

7-8-50. EC910: No Communication with the IMS

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P910 IMS Down	Error – Check Imager (or none)*	Laser Imager Alarm: 60**	P910 IMS Down	ALM,60

* No message will display on the 8100 keypad if the IMS is not operational.

** This message will occur on the V2 keypad only if the data cable between the IMS and MCS has been disconnected.

Summary

The imager has detected that the IMS has not sent a status command in over 45 seconds. (There is a parallel error that the IMS reports if it detects that the MCS is not responding. This is treated as an internal IMS error.)

Sequence of Events

The error occurs when the MCS has not received a command from the IMS in over 45 seconds. The error is declared by the imager, and a log message is queued for the IMS in case it resumes communications.

Phone Fix – Operator Correctable

The operator may try to clear the error by cycling power. If a software problem caused the error, this should clear the problem. If the problem is hardware, cycling power will not clear it. A service call is required.

On-Site – Technician Correctable

The most common cause of the error is disconnection of the data cable between the IMS and MCS. Another cause is the IMS hanging up. The imager cannot distinguish between the two cases. However, if the problem is the data cable between IMS and MCS, the keypads will continue to communicate with the IMS. The only way to clear the error is to reestablish communications between IMS and MCS. If cabling appears to be all right, proceed as follows:

1. Perform the procedure in paragraph 7-9-7 to verify that the IMS is booting without errors. The system should reach the login prompt successfully.
2. If it does not, perform the procedure in paragraph 7-9-12 (TFTP Boot 8100),

7-8-51. EC912: IMS Data Transfer Parity Error Detected

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P912 IMS XFR Parity	Error – Check Imager	None	P912 IMS XFR Parity	None

Summary

The MCS has detected a parity error in the data transfer from the IMS. The printer may be able to continue printing. Affected films will be visibly marked.

Sequence of Events

This error can be generated either by software or hardware problems.

Phone Fix – Operator Correctable

The error sometimes spontaneously clears itself. If it does not, the operator should cycle power. If this does not clear the error, a service call is required.

On-Site – Technician Correctable

7-8-52. EC913: IMS Data Transfer Count Error Detected

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P913 IMS XFR Count	Error – Check Imager	None	P913 IMS XFR Count	None

Summary

The imager has detected that either an incomplete image (underrun) or too much image data (overrun) has been transferred to the optics. The printer may be able to continue printing. Affected films will be visibly marked.

Sequence of Events

This error can be generated either by software or hardware problems.

Phone Fix – Operator Correctable

The error sometimes spontaneously clears itself. If it does not, the operator should cycle power. If this does not clear the error, a service call is required.

On-Site – Technician Correctable

7-8-53. EC921: Feeder Diagnostics Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P921 Printer Err	Error – Check Imager	Laser Imager Alarm: 60	P921 Printer Err	ALM,60

Summary

The Feeder Board failed its power-up self-test. The printer is unable to print. Otherwise, the system can operate as normal (acquiring, queuing prints, completing processing in progress, etc.).

Sequence of Events

At power up, the Feeder Board is commanded to self-test. If it fails the test after three tries, this error is declared.

Phone Fix – Operator Correctable

The operator can try to clear the error by cycling power. However, the error will very likely generate a service call.

On-Site – Technician Correctable

7-8-54. EC922: Barcode Diagnostics Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P922 Printer Err	Error – Check Imager	Laser Imager Alarm: 60	P922 Printer Err	ALM,60

Summary

The Barcode Reader Board failed its power-up self-test. The printer is unable to print. Otherwise, the system can operate as normal (acquiring, queuing prints, completing processing in progress, etc.).

Sequence of Events

At power up, the Barcode Reader Board is commanded to self-test. If it fails the test after three tries, this error is declared.

Phone Fix – Operator Correctable

The operator can try to clear the error by cycling power. However, the error will very likely generate a service call.

On-Site – Technician Correctable

7-8-55. EC923: Optics Diagnostics Fail

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P923 Printer Err	Error – Check Imager	Laser Imager Alarm: 60	P923 Printer Err	ALM,60

Summary

The Optics Board failed its power-up self-test. The printer is unable to print. Otherwise, the system can operate as normal (acquiring, queuing prints, completing processing in progress, etc.).

Sequence of Events

At power up, the Optics Board is commanded to self-test. If it fails the test after three tries, this error is declared.

Phone Fix – Operator Correctable

The operator can try to clear the error by cycling power. However, the error will very likely generate a service call.

On-Site – Technician Correctable

7-8-56. EC924: Densitometer Diagnostics Fail

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
P924 Printer Err	Error – Check Imager	Laser Imager Alarm: 60	P924 Printer Err	ALM,60

Summary

The Densitometer Board failed its power-up self-test. The printer is unable to print. Otherwise, the system can operate as normal (acquiring, queuing prints, completing processing in progress, etc.).

Sequence of Events

At power up, the Densitometer Board is commanded to self-test. If it fails the test after three tries, this error is declared.

Phone Fix – Operator Correctable

The operator can try to clear the error by cycling power. However, the error will very likely generate a service call.

On-Site – Technician Correctable

1. Perform the densitometer reference level adjustment, paragraph 3-5.
2. Check the MCS Log for the message “Densitometer diag failed.”
3. Check the RJ-45 connectors and the cabling between the MCS Board and Densitometer Board.
4. Swap RJ-45 connectors on the MCS Board as follows:
   a. Power off.
   b. Swap the RJ-45 for the Densitometer with the RJ-45 connector for any of the other Microcomm peripherals.
   c. Power up.
   d. Check whether the other Microcomm peripheral failed. If it did, the RJ-45 or cabling is bad.
5. If the RJ-45 connectors and cabling are OK, either the Densitometer Board or the MCS Board is bad.

7-8-57. MCS Diagnostics Failure

Local Panel Message	8100 Keypad Message	V2 Keypad Message	Error Log Message	952 Alarm
None	None	None	None	None

Summary

The MCS software failed its power-up self-test.

Sequence of Events

Self test of the system is run at power up. The system will hang up at the point where the error occurs and the Happy LED on the MCS Board will never start blinking. The system will go to an immediate halt state because the code may be corrupted, and no message will display. The most likely cause of MCS software failing the test is a bad checksum from the EPROMs.

Phone Fix – Operator Correctable

The operator can try to clear the error by cycling power. However, the error will very likely generate a service call.

On-Site – Technician Correctable

1. Power down and reposition Jumper JP1 on the MCS Board to enable the LEDs.
2. Power up.
3. Check to see if LED8 (MCS Happy) is blinking.

7-9. Troubleshooting and Maintenance Procedures (Software-Related)

The following paragraphs contain information for performing various troubleshooting and maintenance operations that relate to software functions. They provide instructions, for example, for:

- Using the Local Panel to find and edit IP addresses
- Accessing and using MPC
- Transferring files to and from the 8100
- Monitoring machine functions in the 8100
- Booting the 8100 if it is unable to boot normally
- Backing up and restoring software in the 8100

7-9-1. Local Panel IP Address Operations

Both the 8100 and the Service PC must be assigned IP addresses, so they can communicate with one another in a network environment. The current addresses assigned to the two are accessible via the Local Panel.

7-9-1-1. Finding an IP Address

Use the following procedure at the Local Panel to determine what (if any) IP addresses have been assigned. (See Figure 7-7 for key locations.)

1. Press the **Maintenance Information** key.	**M01 Total Prints XX** will display.
2. Press the **Down Arrow** key.	**M02 Prints to PM XXXX** will display.
3. Press the **Down Arrow** Key.	**M11 8100 Address 163.228.042.082** displays.
4. Press the **Down Arrow** Key.	**M12 Service PC Addr XXX.XXX.XXX.XXX** displays.

Note
Pressing the **Up Arrow** key at any display will return you to the preceding display.

5. Press the **Enter** key to return to the original display.

7-9-1-2. Editing an IP Address

Use the following procedure at the Local Panel to edit (or enter) an IP address.

<u>To display the desired address:</u>

1. Press the **Up Arrow**, **Test Print**, and **Backlight** keys simultaneously.	**8100 Address 163.228.042.082**
2. Press the **Down Arrow** key	**8100 Netmask 255.255.252.000**
3. Press the **Down Arrow** key.	**8100 Gateway 163.228.042.001**
4. Press the **Down Arrow** key.	**Service PC Address 163.228.xxx.xxx**
5. Press the **Down Arrow** key.	**Service PC Netmask xxx.xxx.xxx.xxx**

6. Press the **Down Arrow** key.

Service PC Gateway
xxx.xxx.xxx.xxx

Note

Pressing the **Up Arrow** key at any display will return you to the previous display. Pressing the **Maintenance Information** key will return you to the original display without saving editing changes.

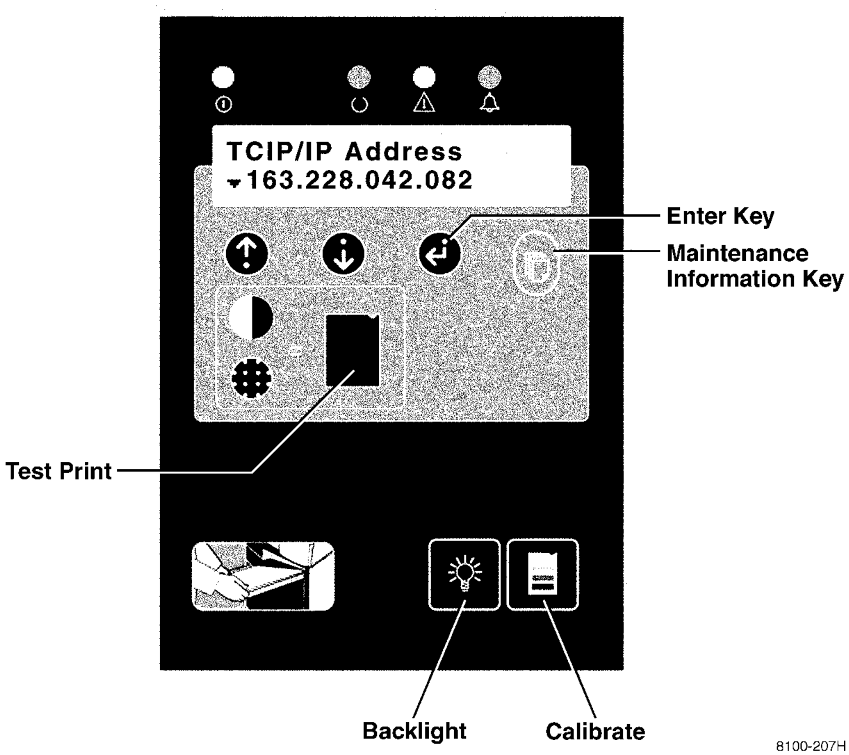


Figure 7-7. Local Panel

To edit any displayed address:

1. Press the **Enter** key.
2. Move the cursor to the desired digit in the address as follows:
   - Press **Calibrate** to move the cursor right.
   - Press **Backlight** to move the cursor left.
3. Edit the selected digit as follows:
   - Press **Up Arrow** to increment the displayed digit.
   - Press **Down Arrow** to decrement the displayed digit.
4. After editing, press **Enter** (or press the **Maintenance Information** key to cancel the editing.)
5. If you wish to edit another address, scroll to the correct location and edit as described in steps 2, 3, and 4.
6. When you have finished editing, press the **Maintenance Information** key to return to the original menu.
7. Wait 60 seconds. Then cycle machine power to save all editing changes.

7-9-2. Using MPC

8100 MPC is a set of software service tools, embedded in the 8100 internal software, intended for use by field engineers. A Service PC (a portable computer with a web browser) is used to access the 8100 MPC. The web browser in the PC provides the user interface to the 8100 MPC tools. MPC is used to:

- Configure the laser imager
- Assist in performing adjustments (e.g., processor temperature adjustment and optics alignment)
- View log errors and diagnose malfunctions in the laser imager

The following paragraphs provide procedures for connecting your Service PC into a network environment with the 8100, and for using your PC to access MPC in the 8100. To access MPC in this way you will need: (1) the web address of the laser imager, (2) a User name, and (3) a Password.

Note

The 8100 MPC includes detailed Help files that explain all of the functions it performs.

7-9-3. Connecting the Service PC and 8100 into a Network

Your PC and the 8100 can be connected as follows to access the network so you can use MPC or transfer (FTP) files between your PC and the 8100. Cable connections are shown in Figure 7-8.

Connecting the Service PC and 8100 through a Customer's Network

The connection of the PC and 8100 can be made through the customer's network as shown in Figure 7-8, either with or without a hub.

1. Use standard 10BaseT cable with RJ-45 connectors.
2. Set the IP Address of the PC to the same subnet or network address as that used by the 8100. For example, if the IP Address of the 8100 is 163.228.48.xxx, the PC address must be 163.228.48.yyy.

Note

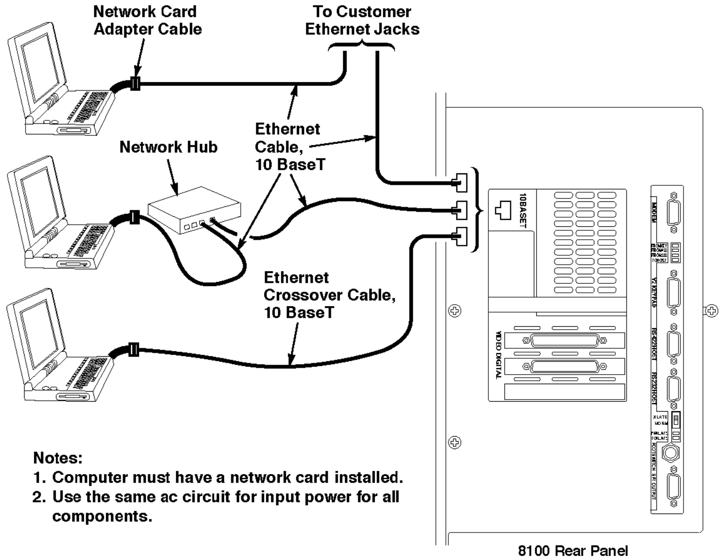
If you are connecting to a customer's network, you cannot use an IP Address that is already in use by another device. Check with the customer's IT department for an available IP Address.

Using a Hub to Connect the PC and 8100 in a Network Setup

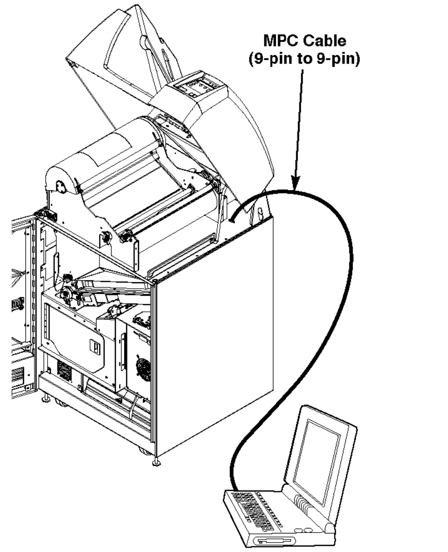
1. Using standard 10BaseT cables with RJ-45 connectors:
   - Connect the 8100 (from its 10BaseT connector) to the hub. Then connect the PC (from its Network Interface Card) to the hub.
   - If the 8100 is to be used on the customer's network, use the uplink or cascade port on the hub to connect the hub to the network wall jack. (This will connect all devices on the hub to the network.)
2. Make sure power is applied to the hub.
3. Make sure that the uplink or cascade switch is in the correct position (if the hub is so equipped).
4. Set the IP Address of the PC to the same subnet or network address as that used by the 8100. For example, if the IP Address of the 8100 is 163.228.48.xxx, the PC address must be 163.228.48.yyy.

Connecting the PC and 8100 Directly in a Network Setup Via a Crossover Cable

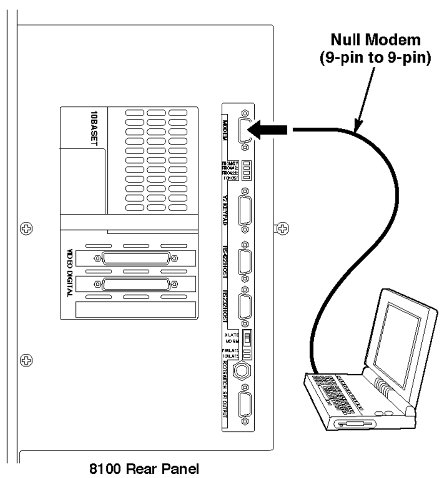
1. Use a 10BaseT crossover cable to connect the 8100 10BaseT connector to the PC network card.
2. Set the IP Address of the PC to the same subnet or network address as that used by the 8100. For example, if the IP Address of the 8100 is 163.228.48.xxx, the PC address must be 163.228.48.yyy.



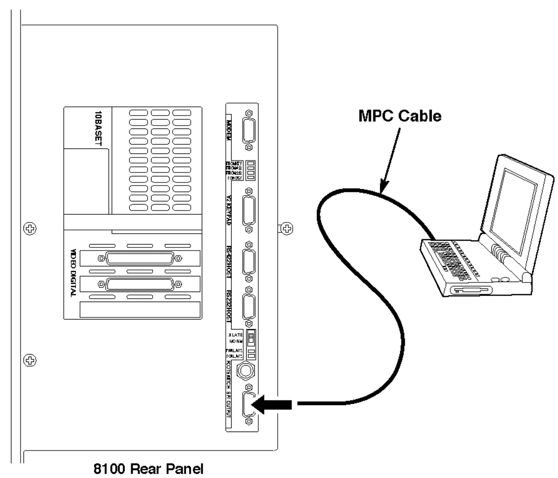
Options for Network Connection to MPC



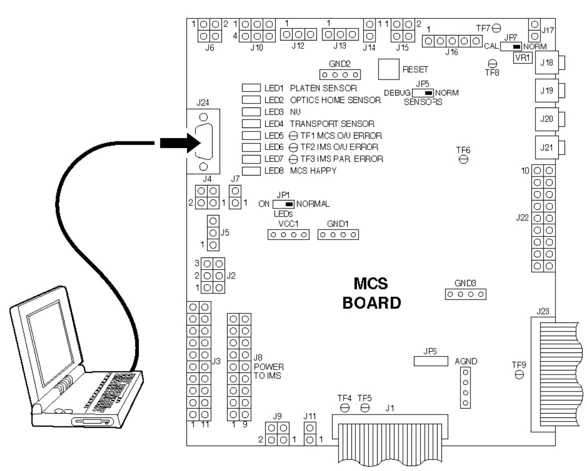
Standard Serial Cable Connection to MPC



Connection for Monitoring the IMS



Connection for Monitoring the Spy Port



Connection for Monitoring the MCS

8100-221A

Figure 7-8. Connecting the Service PC to the 8100

7-9-4. Using the Internet Browser to Access MPC Software

Use of the web browser is the preferred method of accessing MPC.

1. Open your web browser by selecting **Internet Explore**r from Windows 95.
2. Make sure the proxy server is disabled, as follows:
   a. Select **View** and then **Internet Options/Connection**.
   b. Uncheck the box labeled **Access the Internet using a proxy server**, and press **Return**.
3. Access the 8100 web page as follows:
   a. If your browser is not running:
      - Click on **Start** and select **Run**.
      - Enter **http:// <8100 IP Address>** . (Do not include leading zeros). Then click **OK**.
   b. If the browser is running: In the address box, enter the IP address of the 8100. Then press **Ente**r.
   c. Create a book mark by selecting **Favorites**, then **Add to Favorites**.
4. Click on **Authorized Field Engineer**, then **Continue**.
5. Enter your Username and Password in the box. (You can now select from the MPC main menu.)

7-9-5. Using a Direct Serial Connection to Access MPC

This is an optional method of communicating with the MPC if for some reason (bad network card, etc.) you can't use the Internet browser. The procedure assumes that your PC has been configured for direct serial connection as instructed in paragraph 7-9-14.

1. Use a standard MPC cable to connect the serial port on your PC with the MPC serial port on the 8100. (See Figure 7-8. This is the connector on the rear base plate of the processor, accessed by raising the upper hood.)
2. Power on the 8100 and allow it to achieve the **Ready** state.
3. Launch the **8100 MPC Direct** connection icon in **Dial-up Networking**, and click on **Connec**t. (No user name or password is required.)
4. Wait about 3 minutes for an indication that you are connected.
5. Access 8100 MPC by entering **http://10.1.2.1** in the browser address window. (If the connection does not occur, verify that the **Proxy Server** browser setting is not checked.)

7-9-6. Monitoring the MCS Via a Direct Cable Connection to the MCS Board

The following session can be used to monitor activity in the MCS. It will allow you to display the same types of information that are written to the logs. If you suspect, for example, that the MCS is not booting properly, you can set up a session as described below, then cycle power and observe the boot and initialization process on your PC.

1. Power off the 8100.
2. Use an MPC cable (standard DB9 to DB9) to connect your PC to the 9-pin connector (J24) on the left side of the MCS Board (see Figure 7-8).
3. Using HyperTerminal, ProComm or an equivalent communications application, set the following communication parameters:

   Baud rate = 9600, Data bits = 8, Parity = None, Stop bits = 1, Flow control = None
4. Select **Properties** and then **Setting** to display the Emulation screen.
5. Set Emulation = VT 52 or VT 100.

Caution

While you are in monitoring mode, DO NOT type anything. This can damage the MCS software.

6. Turn on logging in the communications application to capture data when the 8100 is powered on.
7. Power on the 8100 and observe the boot-up data. (Following is a printout of a typical boot sequence.)

Log::Log:creating log logMCS with logopts = 0002, facility = 160	
<5>Jan 01 00:00:00.0 logMCS: Version V1.0.1 Mon Mar 29 10:57:05 CST 1999 us686945 rom	
<7>Jan 01 00:00:00.1 logMCS: HELLO! I'm happy!	*(The "Happy" LED on the MCS Board is blinking.)*
<3>Jan 01 00:00:02.0 logMCS: genericGetStatus: Local Panel showed RESET COMPLETE	
<5>Jan 01 00:00:04.0 logMCS: LP diags 0	*(Local Panel has passed its diagnostics.)*
<3>Jan 01 00:00:04.1 logMCS: Checksum is 0x4458	
<7>Jan 01 00:00:05.8 logMCS: Make sure state is stateSelfTest	*(Local Panel displays S00, Self Test.)*
<6>Jan 01 00:00:05.9 logMCS: Processor::startTempControl	*(MCS temperature control process begins.)*
<7>Jan 01 00:00:10.0 logMCS: displayFilmCount 0	
<3>Jan 01 00:00:10.0 logMCS: P000 Clearing Films 0	*(Start clearing film.)*
<7>Jan 01 00:00:10.1 logMCS: displayFilmCount 0	
<7>Jan 01 00:00:30.9 logMCS: clearFilm 1 AT_PLATEN	
<7>Jan 01 00:00:30.9 logMCS: PrintEngine:activeFilmCount 1	
<7>Jan 01 00:00:31.0 logMCS: clearFilm 2 AT_PICKUP	
<6>Jan 01 00:00:31.1 logMCS: Film:exposeMe 1	
<7>Jan 01 00:00:31.1 logMCS: PrintEngine:activeFilmCount 2	
<5>Jan 01 00:00:31.2 logMCS: PrintEngine:service switch closed	
<6>Jan 01 00:00:31.3 logMCS: Processor warm time 8	
<7>Jan 01 00:00:44.0 logMCS: displayFilmCount 0	
<7>Jan 01 00:00:44.2 logMCS: displayFilmCount 0	
<6>Jan 01 00:00:51.1 logMCS: Film:kickMeOffPlaten 1	
<7>Jan 01 00:00:51.2 logMCS: PROC_READY	
<7>Jan 01 00:00:51.2 logMCS: PlatenMotor:unloadDirection	
<7>Jan 01 00:00:53.3 logMCS: PlatenMotor:motorOff	
<6>Jan 01 00:00:53.9 logMCS: Film:kickMeOffPlaten 1	
<7>Jan 01 00:00:53.9 logMCS: PROC_READY	
<7>Jan 01 00:00:54.0 logMCS: PlatenMotor:unloadDirection	

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<7>Jan 01 00:00:56.0 logMCS: PlatenMotor:motorOff
<6>Jan 01 00:00:56.1 logMCS: Film:filmJam 1 status=3
<7>Jan 01 00:00:56.2 logMCS: PrintEngine:activeFilmCount 1
<3>Jan 01 00:00:56.2 logMCS: Film 1 didn't clear–there was no film
<6>Jan 01 00:01:07.9 logMCS: Processor warm time 7
<6>Jan 01 00:01:10.1 logMCS: fsm_rconfreq(LCP): Rcvd id 1.              (MCS to IMS PPP negotiation begins.)
<6>Jan 01 00:01:10.2 logMCS: fsm_sdata(LCP): Sent code 1, id 1.                 I
<6>Jan 01 00:01:10.3 logMCS: LCP: sending Configure–Request, id 1               I
<6>Jan 01 00:01:10.4 logMCS: lcp_reqci: rcvd MRU                                I
<6>Jan 01  00:01:10.4 logMCS: (1500)                                            I
<6>Jan 01 00:01:10.5 logMCS:  (ACK)                                             I
<6>Jan 01 00:01:10.5 logMCS: lcp_reqci: rcvd ASYNCMAP                           I
<6>Jan 01 00:01:10.6 logMCS: (a0000)                                            I
<6>Jan 01 00:01:10.6 logMCS:  (ACK)                                             I
<6>Jan 01 00:01:10.7 logMCS: lcp_reqci: returning CONFACK.                      I
<6>Jan 01 00:01:10.8 logMCS: fsm_sdata(LCP): Sent code 2, id 1.                 I
<6>Jan 01 00:01:10.9 logMCS: fsm_rconfack(LCP): Rcvd id 1.                      I
<6>Jan 01 00:01:11.0 logMCS: fsm_sdata(IPCP): Sent code 1, id 1.                I
<6>Jan 01 00:01:11.0 logMCS: IPCP: sending Configure–Request, id 1              I
<6>Jan 01 00:01:11.1 logMCS: lcp_up: Peer MRU: 1500, Async Map a0000            I
<6>Jan 01  00:01:11.2 logMCS: Film:feedMe 2                                     I
<7>Jan 01  00:01:11.2 logMCS: Film:start feed                                   I
<7>Jan 01 00:01:11.3 logMCS: PlatenMotor:loadDirection                          I
<6>Jan 01 00:01:11.8 logMCS: fsm_rconfreq(IPCP): Rcvd id 1.                     I
<6>Jan 01 00:01:11.9 logMCS: ipcp: received ADDR                                I
<6>Jan 01 00:01:12.0  logMCS: (10.1.1.1)                                        I
<6>Jan 01 00:01:12.0  logMCS: (ACK)                                             I
<6>Jan 01 00:01:12.1 logMCS: ipcp: returning Configure–ACK                      I
<6>Jan 01 00:01:12.1 logMCS: fsm_sdata(IPCP): Sent code 2, id 1.                I
<6>Jan 01 00:01:12.2 logMCS: fsm_rconfack(IPCP): Rcvd id 1.                     I
<6>Jan 01  00:01:12.3 logMCS: ipcp: up                                          I
<6>Jan 01 00:01:12.3 logMCS: local  IP address 10.1.1.2                         I
<6>Jan 01 00:01:12.4  logMCS: remote IP address 10.1.1.1                        V
<7>Jan 01 00:01:15.4 logMCS: PlatenMotor:motorOff
<6>Jan 01 00:01:15.5 logMCS: Film:filmJam 2 status=1
<7>Jan 01 00:01:15.7 logMCS: PrintEngine:activeFilmCount 0
<3>Jan 01 00:01:15.9 logMCS: Film 2 didn't clear–there was no film      (All film clearing done.)
<5>Jan 01 00:01:16.1 logMCS: Start muFeeder diagnostics                 (Start feeder diagnostics.)
<7>Jan 01 00:01:16.2 logMCS: displayFilmCount 0
<6>Jan 01 00:01:16.4 logMCS: imUserContrast SET: 8                      (MCS starts to receive configuration
<6>Jan 01 00:01:17.0 logMCS: imUserDmax SET: 2700                        information from IMS.)
<3>Jan 01 00:01:17.3 logMCS: GetStatus: Feeder showed
    RESET COMPLETE
<6>Jan 01 00:01:17.5 logMCS: imLanguage SET: 1
<6>Jan 01 00:01:17.8 logMCS: imSysLogLevelPrint SET: 6
<6>Jan 01 00:01:18.2 logMCS: imTotalPrintCount SET: 507
<6>Jan 01 00:01:18.6 logMCS: imPrintsUntilPM SET: 9493
<6>Jan 01 00:01:19.4 logMCS: imIpAddr SET: 0xa3e42a68
<6>Jan 01 00:01:19.8 logMCS: imNetMask SET: 0xfffffe00
<6>Jan 01 00:01:20.2 logMCS: imGateway SET: 0xa3e42a01
<6>Jan 01 00:01:20.6 logMCS: imMpcIpAddr SET: 0xa3e42a04
<6>Jan 01 00:01:21.0 logMCS: imMpcNetMask SET: 0xfffffe00
<6>Jan 01 00:01:21.4 logMCS: imMpcGateway SET: 0xa3e42a01
<3>Jan 01 00:01:22.5 logMCS: genericGetStatus from: Feeder error: 0x60002
<6>Jan 01 00:01:22.8 logMCS: imGsmMode SET: 1
<3>Jan 01 00:01:23.0 logMCS: genericGetStatus from: Feeder error: 0x60002
<6>Jan 01 00:01:23.3 logMCS: imGsmLogEImageMax SET: 3250
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<3>Jan 01 00:01:23.5 logMCS: muComm.getResponse from:
Local Panel Cmd: 0x30 error: 0x60001
<6>Jan 01 00:01:23.7 logMCS: imGsmIgnoreDpatch SET: 0
<6>Jan 01 00:01:24.6 logMCS: imOpTranslationSpeed SET: 227
<6>Jan 01 00:01:25.0 logMCS: imOpSOPDelay SET: 123
<6>Jan 01 00:01:25.8 logMCS: imOpLaserDeadTime SET: 5122
<6>Jan 01 00:01:26.6 logMCS: imOpSOSLevel SET: 3600
<6>Jan 01 00:01:27.0 logMCS: imOpAttenOverride SET: 0 –
Attenuator Normal Operation
<6>Jan 01 00:01:27.8 logMCS: imProcOffset SET: –26
<6>Jan 01 00:01:28.6 logMCS: imProcGainBandWidth SET: 15
<6>Jan 01 00:01:29.0 logMCS: imProcTimeRate SET: 0
<6>Jan 01 00:01:29.4 logMCS: imProcessorTimeReset SET: 25
<6>Jan 01 00:01:29.8 logMCS: imProcDacBandWidth SET: 150
<6>Jan 01 00:01:30.2 logMCS: imPrintProcessorSetPoint SET: 12250
<6>Jan 01 00:01:31.0 logMCS: imErrorP075 SET: 0 *(MCS begins to receive error tally*
<6>Jan 01 00:01:31.4 logMCS: imErrorP116 SET: 0 *information from IMS.)*
<6>Jan 01 00:01:32.2 logMCS: imErrorP118 SET: 0
<6>Jan 01 00:01:32.6 logMCS: imErrorP119 SET: 0
<6>Jan 01 00:01:33.0 logMCS: imErrorP121 SET: 0
<6>Jan 01 00:01:33.4 logMCS: imErrorP123 SET: 0
<6>Jan 01 00:01:33.8 logMCS: imErrorP126 SET: 0
<6>Jan 01 00:01:34.2 logMCS: imErrorP132 SET: 17
<6>Jan 01 00:01:34.6 logMCS: imErrorP133 SET: 11
<6>Jan 01 00:01:35.0 logMCS: imErrorP134 SET: 4
<6>Jan 01 00:01:35.4 logMCS: imErrorP137 SET: 28
<6>Jan 01 00:01:35.8 logMCS: imErrorP138 SET: 17
<6>Jan 01 00:01:36.2 logMCS: imErrorP139 SET: 4
<6>Jan 01 00:01:36.6 logMCS: imErrorP145 SET: 0
<6>Jan 01 00:01:37.0 logMCS: imErrorP146 SET: 0
<5>Jan 01 00:01:37.8 logMCS: muFeeder diag rcode=60000
<6>Jan 01 00:01:38.0 logMCS: imErrorP149 SET: 93
<5>Jan 01 00:01:38.1 logMCS: Pickup diag passed *(Feeder diagnostics passed.)*
<5>Jan 01 00:01:38.3 logMCS: Start muBarCode diagnostics *(Start barcode diagnostics.)*
<6>Jan 01 00:01:38.6 logMCS: imErrorP154 SET: 0
<6>Jan 01 00:01:39.0 logMCS: imErrorP163 SET: 0
<6>Jan 01 00:01:39.4 logMCS: imErrorP164 SET: 0
<3>Jan 01 00:01:39.6 logMCS: genericGetStatus: Barcode showed
RESET COMPLETE
<5>Jan 01 00:01:39.8 logMCS: muBarCode diag rcode=60000
<6>Jan 01 00:01:40.0 logMCS: imErrorP165 SET: 2
<5>Jan 01 00:01:40.2 logMCS: Barcode diag passed *(Barcode diagnostics passed.)*
<5>Jan 01 00:01:40.3 logMCS: Start Densitometer diagnostics *(Start densitometer diagnostics.)*
<6>Jan 01 00:01:40.6 logMCS: imErrorP169 SET: 1
<6>Jan 01 00:01:41.0 logMCS: imErrorP176 SET: 6
<6>Jan 01 00:01:41.4 logMCS: imErrorP177 SET: 17
<3>Jan 01 00:01:41.6 logMCS: genericGetStatus: Densi showed
RESET COMPLETE
<6>Jan 01 00:01:41.8 logMCS: imErrorP202 SET: 31
<6>Jan 01 00:01:42.2 logMCS: imErrorP208 SET: 29
<6>Jan 01 00:01:42.6 logMCS: imErrorP506 SET: 290
<5>Jan 01 00:01:42.8 logMCS: Densitometer diag rcode=0x60000
<5>Jan 01 00:01:43.0 logMCS: Densitometer diag passed *(Densitometer diagnostics passed.)*
<5>Jan 01 00:01:43.3 logMCS: Start muOptics diagnostics *(Start optics diagnostics.)*
<6>Jan 01 00:01:43.5 logMCS: imErrorP507 SET: 0
<6>Jan 01 00:01:44.2 logMCS: imErrorP509 SET: 1
<3>Jan 01 00:01:44.5 logMCS: genericGetStatus: Optics showed

RESET COMPLETE
<6>Jan 01 00:01:44.7 logMCS: imErrorP512 SET: 64
<5>Jan 01 00:01:44.9 logMCS: muOptics diag rcode=60000
<5>Jan 01 00:01:45.1 logMCS: Exposer diag passed *(Optics diagnostics passed.)*
<6>Jan 01 00:01:45.2 logMCS: OpticsCalib:laserSetAttenOpen – 3659 *(Start optics calibration.)*
<6>Jan 01 00:01:45.4 logMCS: imErrorP513 SET: 4
<6>Jan 01 00:01:45.6 logMCS: OpticsCalib:powerMonitorMin – 2492
<6>Jan 01 00:01:46.2 logMCS: imErrorP514 SET: 17
<6>Jan 01 00:01:47.0 logMCS: imErrorP515 SET: 21
<6>Jan 01 00:01:47.4 logMCS: imErrorP542 SET: 0
<6>Jan 01 00:01:47.8 logMCS: imErrorP543 SET: 0
<6>Jan 01 00:01:48.2 logMCS: imErrorP544 SET: 3
<6>Jan 01 00:01:49.0 logMCS: imErrorP550 SET: 0
<6>Jan 01 00:01:49.4 logMCS: imErrorP551 SET: 0
<6>Jan 01 00:01:49.8 logMCS: imErrorP554 SET: 0
<6>Jan 01 00:01:50.6 logMCS: imErrorP561 SET: 0
<6>Jan 01 00:01:51.0 logMCS: imErrorP601 SET: 0
<6>Jan 01 00:01:51.4 logMCS: imErrorP602 SET: 0
<6>Jan 01 00:01:51.8 logMCS: imErrorP603 SET: 0
<6>Jan 01 00:01:52.2 logMCS: imErrorP604 SET: 11
<6>Jan 01 00:01:52.6 logMCS: imErrorP605 SET: 0
<6>Jan 01 00:01:52.9 logMCS: powerMonitorOffset: 18
<6>Jan 01 00:01:53.1 logMCS: imErrorP606 SET: 0
<6>Jan 01 00:01:53.2 logMCS: powerMonitorAttenOpen: 3499
<6>Jan 01 00:01:53.5 logMCS: pmAttenCalib: 0 3488
<6>Jan 01 00:01:53.8 logMCS: imErrorP620 SET: 0
<6>Jan 01 00:01:54.6 logMCS: imErrorP622 SET: 0
<6>Jan 01 00:01:54.8 logMCS: pmAttenCalib: 33 3409
<6>Jan 01 00:01:55.0 logMCS: imErrorP623 SET: 0
<6>Jan 01 00:01:55.4 logMCS: imErrorP624 SET: 9
<6>Jan 01 00:01:55.8 logMCS: imErrorP625 SET: 0
<6>Jan 01 00:01:56.0 logMCS: pmAttenCalib: 65 3218 *(Begin optics attenuator calibration.*
<6>Jan 01 00:01:56.2 logMCS: imErrorP631 SET: 1 *Set to 21 positions and measure*
<6>Jan 01 00:01:56.6 logMCS: imErrorP632 SET: 0 *beam power.)*
<6>Jan 01 00:01:57.0 logMCS: imErrorP640 SET: 0
<6>Jan 01 00:01:57.3 logMCS: pmAttenCalib: 98 2922
<6>Jan 01 00:01:57.5 logMCS: imErrorP641 SET: 0
<6>Jan 01 00:01:58.2 logMCS: imErrorP699 SET: 0
<6>Jan 01 00:01:58.6 logMCS: pmAttenCalib: 130 2559
<6>Jan 01 00:01:58.7 logMCS: imErrorP910 SET: 0
<6>Jan 01 00:01:59.4 logMCS: imErrorP912 SET: 0
<6>Jan 01 00:01:59.8 logMCS: pmAttenCalib: 163 2178
<6>Jan 01 00:02:00.2 logMCS: imErrorP913 SET: 0
<6>Jan 01 00:02:00.6 logMCS: imErrorP920 SET: 0
<6>Jan 01 00:02:01.0 logMCS: imErrorP921 SET: 20
<6>Jan 01 00:02:01.2 logMCS: pmAttenCalib: 195 1880
<6>Jan 01 00:02:01.4 logMCS: imErrorP922 SET: 0
<6>Jan 01 00:02:01.8 logMCS: imErrorP923 SET: 0
<6>Jan 01 00:02:02.2 logMCS: imErrorP924 SET: 5
<6>Jan 01 00:02:02.4 logMCS: pmAttenCalib: 228 1583
<6>Jan 01 00:02:02.6 logMCS: imErrorP925 SET: 0
<6>Jan 01 00:02:03.7 logMCS: pmAttenCalib: 260 1318
<6>Jan 01 00:02:05.0 logMCS: pmAttenCalib: 293 1117
<6>Jan 01 00:02:06.2 logMCS: pmAttenCalib: 325 937
<6>Jan 01 00:02:07.2 logMCS: imPrintComplete SET: 0
<6>Jan 01 00:02:07.5 logMCS: pmAttenCalib: 358 808
<6>Jan 01 00:02:07.8 logMCS: Processor warm time 6

<6>Apr 29 08:53:12.0 logMCS: imSystemDate SET: Old Time
Jan 01 00:02:08.0
<6>Apr 29 08:53:12.6 logMCS: pmAttenCalib: 390 700
<6>Apr 29 08:53:13.9 logMCS: pmAttenCalib: 423 602
<6>Apr 29 08:53:15.1 logMCS: pmAttenCalib: 455 539
<6>Apr 29 08:53:16.4 logMCS: pmAttenCalib: 488 479
<6>Apr 29 08:53:17.6 logMCS: pmAttenCalib: 520 423
<6>Apr 29 08:53:18.9 logMCS: pmAttenCalib: 553 382
<6>Apr 29 08:53:20.1 logMCS: pmAttenCalib: 585 344
<6>Apr 29 08:53:21.4 logMCS: pmAttenCalib: 618 307
<6>Apr 29 08:53:22.6 logMCS: pmAttenCalib: 650 282
<6>Apr 29 08:53:22.8 logMCS: aodCalib: 0.000000 *(Optical density measured at 21*
<6>Apr 29 08:53:23.0 logMCS: aodCalib: 0.009949 *attenuator positions.)*
<6>Apr 29 08:53:23.1 logMCS: aodCalib: 0.034990
<6>Apr 29 08:53:23.3 logMCS: aodCalib: 0.076896
<6>Apr 29 08:53:23.5 logMCS: aodCalib: 0.134506
<6>Apr 29 08:53:23.7 logMCS: aodCalib: 0.204519
<6>Apr 29 08:53:23.9 logMCS: aodCalib: 0.268419
<6>Apr 29 08:53:24.1 logMCS: aodCalib: 0.343096
<6>Apr 29 08:53:24.3 logMCS: aodCalib: 0.422661
<6>Apr 29 08:53:24.5 logMCS: aodCalib: 0.494523
<6>Apr 29 08:53:24.7 logMCS: aodCalib: 0.570837
<6>Apr 29 08:53:24.9 logMCS: aodCalib: 0.635165
<6>Apr 29 08:53:25.1 logMCS: aodCalib: 0.697478
<6>Apr 29 08:53:25.3 logMCS: aodCalib: 0.762980
<6>Apr 29 08:53:25.5 logMCS: aodCalib: 0.810988
<6>Apr 29 08:53:25.7 logMCS: aodCalib: 0.862241
<6>Apr 29 08:53:25.9 logMCS: aodCalib: 0.916236
<6>Apr 29 08:53:26.1 logMCS: imMediaLutBuilt SET: 0
<6>Apr 29 08:53:26.2 logMCS: aodCalib: 0.960513
<6>Apr 29 08:53:26.4 logMCS: aodCalib: 1.006018
<6>Apr 29 08:53:26.6 logMCS: aodCalib: 1.055438
<6>Apr 29 08:53:26.7 logMCS: aodCalib: 1.092327
<6>Apr 29 08:53:26.9 logMCS: aodRange: 1.09
<6>Apr 29 08:53:27.1 logMCS: optical density from laser diagnostics: 0.94
<6>Apr 29 08:53:27.4 logMCS: attenSettingMax = 536
<6>Apr 29 08:53:35.9 logMCS: powerMonitorLaserMax: 3667.81 *(Max Min = Laser Dynamic*
<6>Apr 29 08:53:37.3 logMCS: powerMonitorLaserMin: 24.94 *Range.* 3667.81 *24.94 = 147.080*)
<6>Apr 29 08:53:37.5 logMCS: laserDynRange: 147.080
<6>Apr 29 08:53:37.7 logMCS: absoluteMaxPower: 23.747025
<6>Apr 29 08:53:37.9 logMCS: wedgeDigitalValue[25]: 4095 *(Set the digital values used to expose*
<6>Apr 29 08:53:38.1 logMCS: wedgeDigitalValue[24]: 4089 *the 26 steps on calibration film.)*
<6>Apr 29 08:53:38.3 logMCS: wedgeDigitalValue[23]: 4081
<6>Apr 29 08:53:38.5 logMCS: wedgeDigitalValue[22]: 4072
<6>Apr 29 08:53:38.6 logMCS: wedgeDigitalValue[21]: 4061
<6>Apr 29 08:53:38.8 logMCS: wedgeDigitalValue[20]: 4047
<6>Apr 29 08:53:39.0 logMCS: wedgeDigitalValue[19]: 4030
<6>Apr 29 08:53:39.2 logMCS: wedgeDigitalValue[18]: 4010
<6>Apr 29 08:53:39.4 logMCS: wedgeDigitalValue[17]: 3985
<6>Apr 29 08:53:39.6 logMCS: wedgeDigitalValue[16]: 3954
<6>Apr 29 08:53:39.7 logMCS: wedgeDigitalValue[15]: 3917
<6>Apr 29 08:53:39.9 logMCS: wedgeDigitalValue[14]: 3871
<6>Apr 29 08:53:40.1 logMCS: wedgeDigitalValue[13]: 3815
<6>Apr 29 08:53:40.3 logMCS: wedgeDigitalValue[12]: 3747
<6>Apr 29 08:53:40.5 logMCS: wedgeDigitalValue[11]: 3664
<6>Apr 29 08:53:40.7 logMCS: wedgeDigitalValue[10]: 3563
<6>Apr 29 08:53:40.8 logMCS: wedgeDigitalValue[9]: 3439

<6>Apr 29 08:53:41.0 logMCS: wedgeDigitalValue[8]: 3288
<6>Apr 29 08:53:41.3 logMCS: wedgeDigitalValue[7]: 3104
<6>Apr 29 08:53:41.5 logMCS: wedgeDigitalValue[6]: 2879
<6>Apr 29 08:53:41.8 logMCS: wedgeDigitalValue[5]: 2604
<6>Apr 29 08:53:42.0 logMCS: wedgeDigitalValue[4]: 2268
<6>Apr 29 08:53:42.2 logMCS: wedgeDigitalValue[3]: 1858
<6>Apr 29 08:53:42.4 logMCS: wedgeDigitalValue[2]: 1357
<6>Apr 29 08:53:42.6 logMCS: wedgeDigitalValue[1]: 746
<6>Apr 29 08:53:42.7 logMCS: wedgeDigitalValue[0]: 0
<6>Apr 29 08:53:42.9 logMCS: Sos Level from Optics Calib: 3600 *(End optics calibration.)*
<3>Apr 29 08:53:48.4 logMCS: Optics NVRAM Serial Number: 8 *(MCS receives NVRAM data from*
<3>Apr 29 08:53:48.6 logMCS: Optics NVRAM SOSDelay: 164 *optics.)*
<3>Apr 29 08:53:48.8 logMCS: Optics NVRAM StretchID: 0
<3>Apr 29 08:53:49.0 logMCS: Optics NVRAM Stretch: 20797
<5>Apr 29 08:53:49.1 logMCS: changeState to stateOpeningCartridge
<3>Apr 29 08:53:49.9 logMCS: genericGetStatus: Barcode showed RESET COMPLETE
<5>Apr 29 08:54:01.1 logMCS: BarCode emulsion 162
<5>Apr 29 08:54:01.3 logMCS: Barcode jumbo 20
<5>Apr 29 08:54:01.4 logMCS: Barcode band 0
<5>Apr 29 08:54:01.7 logMCS: Barcode id 32
<5>Apr 29 08:54:01.8 logMCS: Barcode film type 10
<5>Apr 29 08:54:02.1 logMCS: Barcode film size 0
<5>Apr 29 08:54:02.2 logMCS: Barcode location 1
<5>Apr 29 08:54:02.5 logMCS: Barcode info different
<6>Apr 29 08:54:11.6 logMCS: Processor warm time 5
<6>Apr 29 08:54:42.6 logMCS: imGsmFilmParameterCoeffA SET: 6002770 *(Film model data for this film*
<6>Apr 29 08:54:43.8 logMCS: imGsmFilmParameterCoeffAPower SET: –9 *type. 9 = blue, 10 = clear.)*
<6>Apr 29 08:54:45.0 logMCS: imGsmFilmParameterCoeffB SET: –9735440
<6>Apr 29 08:54:47.0 logMCS: imGsmFilmParameterCoeffBPower SET: –7
<6>Apr 29 08:54:48.2 logMCS: imGsmFilmParameterCoeffC SET: 972966
<6>Apr 29 08:54:49.0 logMCS: imGsmFilmParameterCoeffCPower SET: 0
<6>Apr 29 08:54:49.8 logMCS: imGsmFilmParameterCoeffD SET: –20980800
<6>Apr 29 08:54:50.6 logMCS: imGsmFilmParameterCoeffDPower SET: 0
<6>Apr 29 08:54:52.6 logMCS: imGsmFilmParameterDmax SET: 3000
<6>Apr 29 08:54:56.6 logMCS: imGsmFilmParameterDmin SET: 50

<6>Apr 29 08:55:06.2 logMCS: imGsmFilmModelDateCreated SET. *(Film model information for*
<6>Apr 29 08:55:07.8 logMCS: imGsmFilmModelCoefficients SET. *this cartridge.*)
<6>Apr 29 08:55:09.4 logMCS: imGsmFilmModelDeltaDmin SET: 1329
<6>Apr 29 08:55:10.6 logMCS: imGsmFilmModelDmin0 SET: 134
<6>Apr 29 08:55:11.4 logMCS: imGsmFilmModelDmin SET: 121
<6>Apr 29 08:55:11.6 logMCS: Processor warm time 4
<6>Apr 29 08:55:11.8 logMCS: imGsmFilmModelLogESet SET: 294581
<6>Apr 29 08:55:13.4 logMCS: imGsmFilmModelTargetDpatch SET: 0
<6>Apr 29 08:55:14.6 logMCS: imGsmTimageMin SET: 409
<6>Apr 29 08:55:15.8 logMCS: imGsmTimageMax SET: 3727
<6>Apr 29 08:55:17.1 logMCS: imGsmCalValues SET.
<6>Apr 29 08:55:18.7 logMCS: imGsmLogEValues SET.
<6>Apr 29 08:55:20.2 logMCS: imCartridgeSheetCount SET: 118
<5>Apr 29 08:55:20.4 logMCS: PrintEngine:imCartridgeSheetCount 118
<5>Apr 29 08:55:20.6 logMCS: changeState to stateOpeningCartridge
<3>Apr 29 08:55:20.8 logMCS: P149 Wait FilmModel 507 14x17 031162–020–A–032
<6>Apr 29 08:55:21.1 logMCS: FilmModel::buildML – coeff1: 2.458700 *(Calculate the Media LUT.)*
<6>Apr 29 08:55:21.3 logMCS: FilmModel::buildML – coeff2: 0.176730

```
<6>Apr 29 08:55:21.6 logMCS: FilmModel::buildML – coeff3: 0.102000
<6>Apr 29 08:55:21.8 logMCS: FilmModel::buildML – coeff4: –0.048010
<6>Apr 29 08:55:22.0 logMCS: FilmModel::buildML – coeff5: 0.016270
<6>Apr 29 08:55:22.2 logMCS: FilmModel::buildML – dMin0: 0.134000
<6>Apr 29 08:55:22.5 logMCS: FilmModel::buildML – deltaDMin: 0.013290
<6>Apr 29 08:55:22.8 logMCS: FilmModel::buildML – laserLogEMax: 2.946625
<6>Apr 29 08:55:23.0 logMCS: FilmModel: beginning of media lut loop
<6>Apr 29 08:55:23.3 logMCS: FilmModel: End of media lut loop
<6>Apr 29 08:55:52.1 logMCS: FilmModel::pSet value: 7.825298
<6>Apr 29 08:55:52.3 logMCS: FilmModel::laserValueForHalfMw: 15336
<6>Apr 29 08:55:52.5 logMCS: FilmModel: sosValue: 3664
<6>Apr 29 08:55:52.7 logMCS: filmmodel. logESet: 2.945810
<6>Apr 29 08:55:52.9 logMCS: SetAtten: aodSet: 0.482108 attensetting: 287
<6>Apr 29 08:55:53.1 logMCS: ignoreDPatchflags set to false at setAtten
<5>Apr 29 08:55:53.3 logMCS: changeState to stateWarming
<6>Apr 29 08:56:11.1 logMCS: Processor warm time 3
<5>Apr 29 08:56:11.3 logMCS: changeState to stateWarming
<6>Apr 29 08:56:27.0 logMCS: imMediaLutBuilt SET: 0
<6>Apr 29 08:57:11.0 logMCS: Processor warm time 2
<5>Apr 29 08:57:11.2 logMCS: changeState to stateWarming
<6>Apr 29 08:58:10.9 logMCS: Processor warm time 1
<5>Apr 29 08:58:11.0 logMCS: changeState to stateWarming
```

7-9-7. Monitoring the IMS Via a Cable Connection to the 8100 MODEM Port

The following session can be used to monitor activity in the IMS. You can set up a session as described below, then cycle power and observe the IMS boot and initialization process on your PC. The procedure will allow you to gain access to the Pshell prompt (pSH+>) or to change the configuration parameters at boot-up.

1. Power off the 8100.
2. Use a null modem DB9 to DB9 cable (female at both ends) to connect your PC to the MODEM port adjacent to the Serial Interface Board connection plate on the 8100 (see Figure 7-8).
3. Using HyperTerminal, ProComm, or an equivalent communications application, set the following communication parameters:

   Baud rate = 9600, Data bits = 8, Parity = None, Stop bits = 1, Flow control = None
4. Select **Properties** and then **Setting** to display the Emulation screen.
5. Set Emulation = VT 52 or VT 100.

Caution
While you are in monitoring mode, DO NOT type anything. This can damage the IMS software.

6. Turn on logging in the communications application to capture data when the 8100 is powered on.
7. Power on the 8100 and observe the log-on data. (Following is an example of a typical boot and initialization sequence.)

DryView 8100(TM)
Copyright (c) Eastman Kodak Company 1999.
<ESC> to configure.....
10T

Starting the SCSI load...
....
....
....
SCSI load completed...
Transferring control to the downloaded code.

10T

Standard output device initialized...

Initalizing Serial devices...
Use console? (Type 'y' within 5 seconds) *(If you do not type "y" in time the system will assume this is a modem connection. If you miss "y", power cycle and try again.)*

..... Using COM1 for console.
..... Using COM2 for MPC Connect.
..... Using COM3 for IMS<—>MCS.
..... Using COM4 for L2Interpreter....done
Initializing mboard...
Running on MTX mboard....done
Initializing clock device...
Booting at 04/29/1999 09:02:36
Date & time successfully set...done

Initializing RN#1 memory region......done
Initializing ramdisk device and filesystem...
Initializing volume 3.0, Please wait......done
Mounting volume 3.0....Done...done
Initializing scsidisk device and filesystem...
SCSI driver initialized...
* HARD DISK ID 0 Vendor: SEAGATE Model: ST32171W Size 4194157
* HOST ID 7 Vendor: Model: Size 0
Found SCSI disk 4, disk size 4194157 *(Begin mounting and verifying hard drive partitions. If any partition is corrupt, an error will appear here.)*

Disk Partition #1, Size:500000 blocks
Mounting volume 4.0.1....Done >>>> RN#0 Allocation: Task ID = 00020000,
Malloc size=2036956, MemAddr= 01BBC594 <<<<

Verifying disk volume 4.0.1, Please wait... Done

Disk Partition #2, Size:500000 blocks
Mounting volume 4.0.2....Done >>>> RN#0 Allocation: Task ID = 00020000,
Malloc size=2036956, MemAddr= 01BBC594 <<<<

Verifying disk volume 4.0.2, Please wait... Done

Disk Partition #3, Size:200000 blocks
Initializing volume 4.0.3, Please wait......done

Mounting volume 4.0.3....Done
Disk Partition #4, Size:2994150 blocks
Mounting volume 4.0.4....Done >>>> RN#0 Allocation: Task ID = 00020000,
Malloc size=12157556, MemAddr= 01215794 <<<<

Verifying disk volume 4.0.4, Please wait... Done

Checking/Creating directory 4.0.4/images/tmp....done
Initializing system environment variables......done
Starting SYSLOG subsystem...
Starting LogServer: MCSLogServer...done
Initializing PCIO digital input/output device......done
Starting PPP interfaces......done *(Connecting to MCS.)*
Starting SNMP agent...
Initialized socket for Mib ioctls....done
Initializing Mib... *(Sending config info to MCS.)*
Used 'current' Mib configuration...done
Initializing video input device......done
Starting FTP subsystem......done
Starting TELNET server......done
Starting HTTP server......done
Initializing Acquire interfaces......done
Initializing Image Processor...syslog: stopping.
syslog: starting....done
Initializing 831/952 Command Processor......done
Initializing Modem......done
Starting Cartridge Manager......done
Starting pSH+ ...

DryView 8100: v1.0.1b6 Wed Apr 7 02:16:21 CDT 1999 us600018

Type Help for command information
Login: **run4ever** *(Enter via this username.)*

Password: **(Return)**

Copyright (c) Integrated Systems, Inc., 1992. Welcome to pSOSystem...

pSH+> **pwd** *(Command to print the working directory.)*

4.0.1/
pSH+> **ls –l** *(Command to list contents of directory.)*

```
total 381
–rwxrwxrwx   1 root      62976 Feb 08 99 11:05 BITMAP.SYS   (These 2 files and 5 directories are in 4.0.1)
–rwxrwxrwx   1 root     128512 Feb 08 99 11:05 FLIST.SYS
drwxrwxrwx   1 root        128 Apr 15 99 14:44 boot
drwxrwxrwx   1 root         96 Apr 28 99 16:01 config
drwxrwxrwx   1 root         16 Feb 08 99 11:09 images
drwxrwxrwx   1 root       1408 Apr 29 99 08:53 log
drwxrwxrwx   1 root        112 Apr 15 99 14:28 www
```

pSH+> **cd boot** *(Change directory to boot.)*

pSH+> **ls –l** *(List the contents of boot.)*

```
total 31098
–rwxrwxrwx   1 root    5621097 Apr 15 99 14:36 bootfile   (These four files are in boot.)
–rwxrwxrwx   1 root    5621097 Apr 15 99 14:38 bt010001.b06
–rwxrwxrwx   1 root    2339596 Apr 15 99 14:39 dg010001.b06
–rwxrwxrwx   1 root    2339596 Apr 15 99 14:39 diagfile
```

4.0.1/
pSH+> **cd 4.0.2/** *(Change the directory to 4.0.2, which is backup to 4.0.1)*

pSH+> **pwd** *(Print the working directory).*

4.0.2/
pSH+> **ls –l** *(List the contentsof the working directory.)*

```
total 381
–rwxrwxrwx   1 root      62976 Feb 08 99 11:05 BITMAP.SYS   (These 2 files and 5 directories are in 4.0.2)
–rwxrwxrwx   1 root      62976 Feb 08 99 11:05 BITMAP.SYS
drwxrwxrwx   1 root        128 Apr 15 99 14:55 boot
drwxrwxrwx   1 root         96 Apr 29 99 08:41 config
drwxrwxrwx   1 root         16 Feb 10 99 10:02 images
drwxrwxrwx   1 root       1408 Apr 29 99 08:53 log
drwxrwxrwx   1 root        112 Apr 15 99 14:54 www
```

pSH+> **cd boot** *(Change the directory to boot.)*

pSH+> **ls –l** *(List the contents of the boot directory.)*

```
total 31098
–rwxrwxrwx   1 root    5621097 Apr 15 99 14:51 bootfile   (These four files are in boot.)
–rwxrwxrwx   1 root    5621097 Apr 15 99 14:52 bt010001.b06
–rwxrwxrwx   1 root    2339596 Apr 15 99 14:53 dg010001.b06
–rwxrwxrwx   1 root    2339596 Apr 15 99 14:51 diagfile
```

Note

The table below shows the structure of the partitions on the hard drive.

Volume 4.0.1 – Contains programs, boot file, system configuration files, canned image files, old log files, www tree,
Volume 4.0.2 – Mirror/backup of 4.0.1.
Volume 4.0.3 – Scratch work area.
Volume 4.0.4 – Print job temporary files, captured image files, current log files.

7-9-8. Monitoring Communications on the Spy Port of the Serial Interface Board

Communications between the host/keypad and the 8100 can be monitored at the Spy Port connector on the Serial Interface Board (SIB). The SIB can be set up to monitor between:

- The 8100 and the **DryView** V2 Keypad
- The 8100 and the **DryView** 8100 Keypad
- The 8100 and an RS232 host
- The 8100 and an RS422 host
- The 8100 and an HPT (Host Protocol Translator) Keypad

1. Set up the SIB as follows:
   a. To monitor between a host or keypad and the IMS:
      1) Set SW1 on the SIB in the NORM (down) position.
      2) Set jumper JP1 on pins 1 and 2.
   b. To monitor between an HPT keypad and the IMS:
      1) Set SW1 in the XLATE (up) position.
      2) Set jumper JP1 on pins 1 and 2.
   c. To monitor between a host and an HPT keypad:
      1) Set SW1 in the XLATE (up) position.
      2) Set jumper JP1 on pins 2 and 3.
2. Set up your Service PC as follows:
   a. Connect an MPC cable from your PC COM port to the Spy Port connector on the SIB (see Figure 7-8.
   b. Launch Hyperterminal/Procomm, using communications parameters set as follows:

      Baud rate = 1200, Data Bits = 8, Parity = Even, Stop bits = 1, Flow control = N one
   c. After setting up the connection, click on **OK** and select **File**/ **Properties**.
   d. On the Properties screen, select the **Settings** tab.
   e. Select emulation of either **VT100** or **VT 52**, and click on **ASCII Setup**.
   f. On the ASCII Setup screen, click on **Append Line Feeds to incoming line ends**.
   g. Click **OK** twice.
3. Apply power to the 8100 and monitor the communications.

7-9-9. Connecting to the 8100 Via a Modem

1. Open up Dial-up Networking.
2. Double-click on the **Make New Connection** icon.
3. Enter a name for the connection (e.g., Mercy Me Hospital).
4. Select a modem to use.
5. Click on **Next>**
6. Enter the **Area code** (if necessary) and the local **Telephone number**.
7. Click on **Next>** and then click on **Finish**.
8. Right-click on the new connection and select **Properties**.
9. Click on **Server Type...**
10. Uncheck the followiing: **Log on to network**, **NetBEUI**, **IPX/SPX Compatible**.
11. Select **OK**, then **OK** again.
12. Double-click the new connection and click on **Connect**. (No username or password is required.)
13. Once connected, use the address 10.1.3.1 to connect with Internet Explorer.

7-9-10. Backing up the 8100 Configuration Files

This procedure ensures that if the 8100 configuration is lost, it can be restored to its most recent state. A configuration backup should be performed:

- At installation, after the customer acceptance phase
- On every service call

A backup operation consists of two parts:

1. Using MPC to copy the current configuration of the 8100 to a directory on the IMS hard drive.
2. Using the 8100 FTP tool to copy the configuration from the IMS hard drive to a floppy diskette.

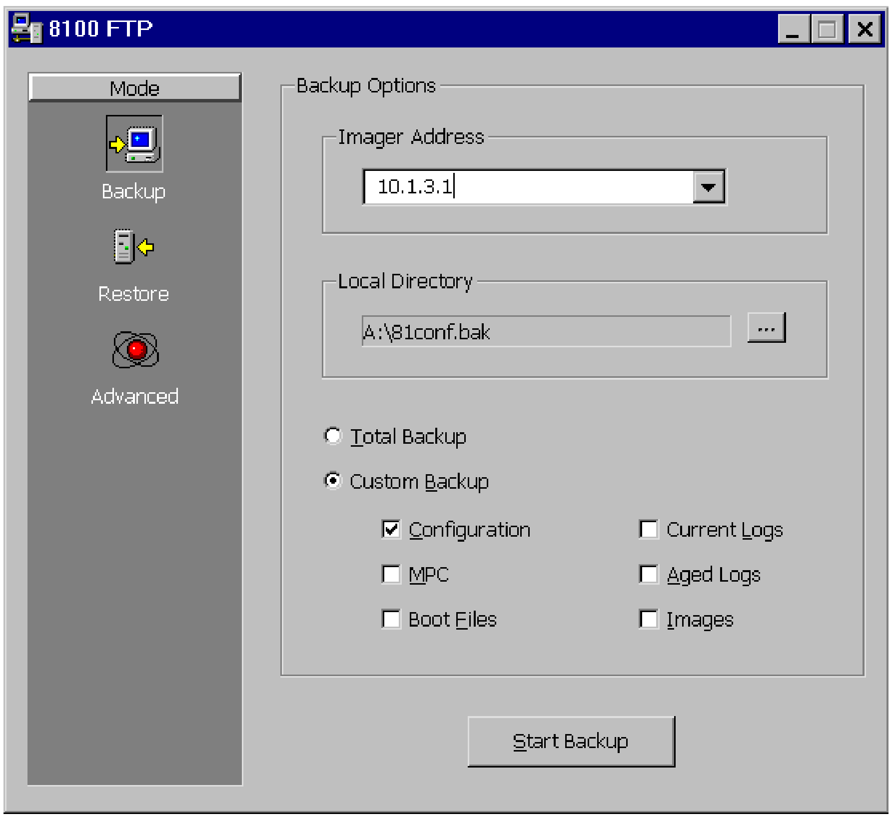
Note
In addition to MPC, you will need 8100 FTP.exe. (Winsock 2 is required also if you are dial-up networking and are using Windows 95.)

Copying the Configuration Files to a Directory on the IMS Hard Drive

1. Connect the service PC to the 8100 via the network (see procedure 7-9-3).
2. Power on the 8100 and wait for it to achieve the **Ready** state.
3. Use the Internet browser to access MPC (see procedure 7-9-4).
4. In MPC, select **Configuration/Backup**.
5. Enter a name for the directory where the backup will be stored on the 8100 IMS hard drive, using one of the following options:
   - Use the name **install** when creating the first backup at time of installation.
   - Use the name **recent** when creating the backup on every service call.
6. Click the **Backup** button to begin the backup operation. (It will complete in a few seconds.)

Copying the Configuration Files from the IMS Hard Drive to a Floppy Diskette

1. Launch the 8100 FTP executable (8100 FTP.exe) on your PC.
2. Select the **Backup** icon in the **Mode** area of the screen.
3. Enter the IP Address of the 8100 in the **Imager Address** box. (Use 10.1.2.1 when connecting via an MPC Direct Serial cable, or 10.1.3.1 when dialing in via a modem.)
4. Insert a blank floppy diskette into the floppy drive of your Service PC.
5. Click the Ellipses (**...**) button in the **Local Director**y box and navigate to the floppy drive of your Service PC.
6. Select **Custom Backup** and place a checkmark in the **Configuration** box (only).
7. Click on **Start Backup.** (You will see a message that backup is in progress, and a message when the process is completed.)
8. Copy the backup files to your Service PC, if you wish. Then leave the floppy diskette with the 8100. (A handy place to store the diskette is in the floppy drive of the 8100 IMS.)



7-9-11. Restoring the 8100 Configuration Files

You will be required to restore configuration to the 8100 in the following situations:

- When a new hard drive is installed in the IMS
- When an entire IMS, including hard drive, has been replaced
- After a corrupt hard drive has been re-initialized (reformatted) and software has been reloaded.

A configuration restore procedure consists of two parts:

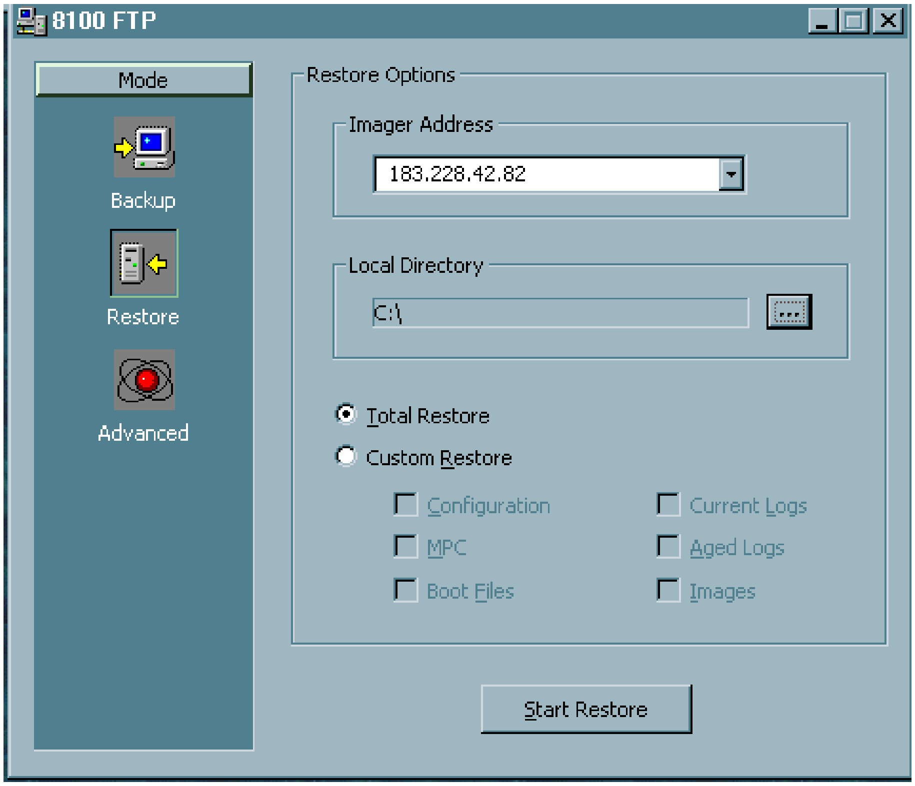
1. Using the 8100 FTP tool to copy the configuration files from the floppy diskette (or your Service PC) to the IMS hard drive.
2. Using MPC to “read” the configuration files from the IMS hard drive into memory.

Note

In addition to MPC, you will need 8100 FTP.exe. (Winsock 2 is required also if you are dial-up networking and are using Windows 95.)

Copying the Configuration Files from Floppy Diskette onto the IMS Hard Drive

1. Connect the service PC to the 8100 via the network (see procedure 7-9-3).
2. Power on the 8100 and wait for it to achieve the **Ready** state.
3. Locate the floppy diskette that contains the most recent configuration backup of the 8100, and insert it into your Service PCs A:drive. (As an option, you may wish to load the contents of the floppy onto the hard drive of your Service PC.)
4. Launch the 8100 FTP executable (8100 FTP.exe) on your PC.



5. Select **Restore** in the **Mode** section of the screen.
6. Enter the IP Address of the 8100 in the **Imager Address** box. (Use 10.1.2.1 when connecting via an MPC Direct Serial cable, or 10.1.3.1 when dialing in via a modem.)
7. Click the Ellipses (**...**) button in the **Local Directory** box and navigate to the directory above the config directory on the floppy drive of your Service PC. (If you have the config files loaded onto the PC of your hard drive, navigate to the directory above the config directory on your PCs hard drive.)
8. Select **Custom Restore** and place a check mark in the **Configuration** box (only).
9. Click on **Start Restore** (You will see a message that restore is in progress, and a message when it is completed.)

Copying the Configuration Files from the IMS Hard Disk into Memory

1. Use the Internet browser to access MPC (see procedure 7-9-4).
2. In MPC, select **Configuration**/**Backup**.
3. Click on **recent** to restore the most recent configuration. (The restore operation will complete in a few seconds.)

7-9-12. Using TFTP Boot 8100

The following procedure describes how to boot the 8100 and examine the IMS hard drive for possible corruption if the 8100 is unable to boot normally. The procedure requires that you have the following software tools loaded in your service PC. (You must also have access to the IMS software stored on CDROM.)

- Tftpd32.exe
- FTP 8100
- Diagfile
- HyperTerminal or Procomm communications software

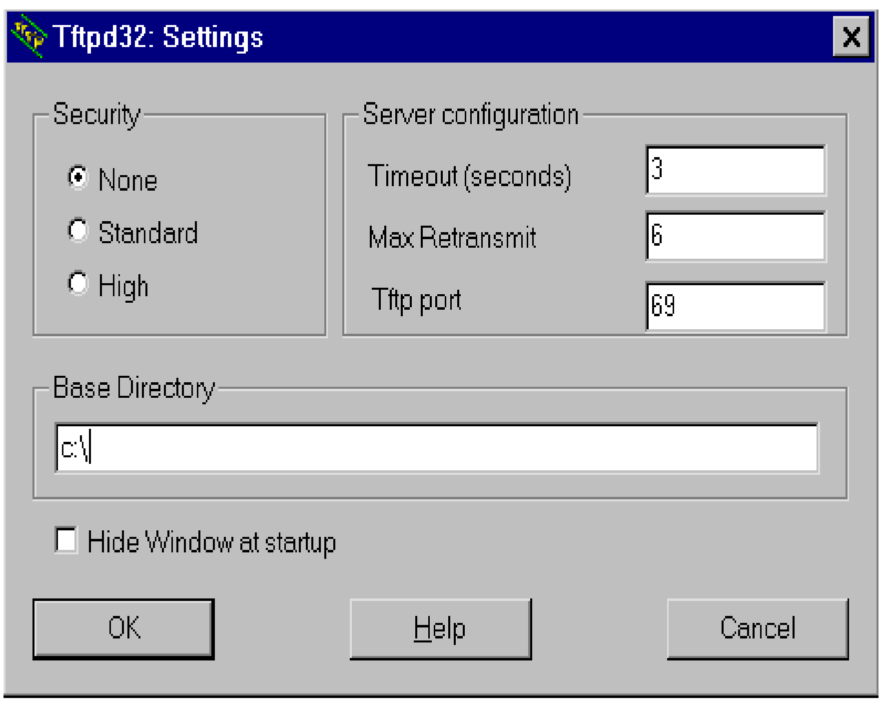
A. Preliminary

1. Connect the service PC to the 8100 via the network (see procedure 7-9–3), but do not power up the 8100 as yet.
2. Launch the TFTPD application (tftpd32.exe) on your PC.
3. Click on **Settings** on the TFTPD32 screen, and on the Tftpd32 Settings screen, set **Security** to **None**.

Note

If there is a period (.) in the **Base Directory** window, delete it before performing the next step.

4. Set the **Base Directory** to **c:** and select **OK**.



5. Check that there is a copy of diagfile in the c:\ (root) directory of your PC. (This file should be available in the boot directory of the IMS tree on CDROM.)
6. Connect a null modem cable from your PC COM port to the MODEM port above the Serial Interface Board on the 8100.
7. Launch HyperTerminal/Procomm, using communication parameters set as follows:

   Baud rate = 9600, Data bits = 8, Parity = None, Stop bits = 1, Flow control = None

8. Apply power to the 8100 and watch the terminal for the following message:

```
DryView 8100 (TM)
Copyright (c) Eastman Kodak Company 1999
<ESC> to configure.....
```

9. Press the **Esc** key on your PC keyboard within 5 seconds after the message appears. The following information will display:

```
STARTUP MODE:
   Run the bootloader
NETWORK INTERFACE PARAMETERS
   If address on LAN is 163.228.142.69
   LAN interface's subnet mask is 0xfffffe00
   Shared memory interface is disabled
   IP address of default gateway to other networks is 163.228.142.1
MULTIPROCESSING PARAMETERS
   This board is currently configured as a single processor system
HARDWARE PARAMETERS
   Serial channels will use a baud rate of 9600
   This board's memory wil reside at 0x1000000 on the VME bus
   This board's Ethernet hardware address is 8:0:3E:27:1:6
   LAN will use the 10BaseT interface
MTX BOARD CONFIGURATION:: F
   Processor Type::PPC603p
   Internal Clock Rate 200 MHz
   External Clock Rate 67 MHz
   DRAM Size :: 32 Mega Bytes
   PCI Bus Clock Rate 33 MHz
   PCI LAN Controller  Dec 21140 Ethernet LANCE
   PCI SCSI Controller  PRESENT
BOOTLOADER PARAMETERS
   Boot via the DISK Bootloader
   Volume is pHILE formatted
   The file to load and start in boot/dicom
      After board is reset, startup code will wait 5 seconds
---------------------------------------------------------------------

      (M)odify any of this or (C)ontinue? (M)
```

10. Enter **M** and press **Return** (indicating that you want to “modify.”) The following text will display:

```
For each of the following questions, you can press <Return> to select
the value shown in braces, or you can enter a new value.
```

B. Modify the Initialization Parameters to Boot from Diagfile in the New IMS Software

1. Press **Return** to accept the default value for each of the first series of questions, until the following text displays:

   ```
   Boot from (D)isk or via (T)ftp over the network? [D]
   ```

2. Enter **T** and press **Return** to indicate that you want to TFT boot over the network, rather than boot from disk. The following text will display:

   ```
   IP address of the TFTP Boot server to boot from? [0.0.0.0]
   ```

3. Enter the IP address of your PC. (It will be displayed in the **Server Address** window of the TFTPD32 application.) The following text will display:

   ```
   What is the name of the file to be loaded and started? [boot/bootfile]
   ```

4. Answer the question by entering **c:\diagfile** (in place of boot/bootfile) and press **Return**. The following text will display:

   ```
   How long (in seconds) should CPU delay before starting up? [5]
   ```

5. Press **Return** to accept the default startup delay of 5 seconds.

6. Review all the information on the screen for accuracy. Then press **c** to continue. Information similar to the following should display:

```
Starting the TFTP download...

TFTP download completed...

Transferring control to the downloaded code.

Checking map for addr 0 length 2000000 attr 50
Checking map for addr ff000000 length 800000 attr 0
Checking map for addr ff800th 100000 attr 0
Checking map for addr fff00000 length 100000 attr 0
Checking map for addr 80000000 length a000 attr 28
Checking map for addr c0000000 length 10000000 attr 428
Checking map for addr 81000000 length 1000 attr 28
Checking map for addr fbff0000 length 10000 attr 28
Checking map for addr fef80000 length 10000 attr 28
Checking map for addr feff0000 length 10000 attr 28
Checking map for addr fcfef000 length 11000 attr 28
Checking map for addr c0000000 length 10000000 attr 428
Checking map for addr d0000000 length 10000000 attr 428
Checking map for addr e0000000 length 10000000 attr 428
10T

   Standard output device initialized

Initializing Serial devices...
   Using COM1 for console.
   Using COM3 for IMS<-->MCS....done
Initializing mboard...
   Running on Unknown mboard....done
Initializing clock device...
   Booting at 03/22/1999  13:52:05
```

```
   Date & to,me successfully set...done
Initializing RN#1 memory region......done
Initializing ramdisk device and filesystem...
Initializing volume 3.0, Please wait......done

   Mounting volume 3.0....Done...done
Initializing scsidisk device and filesystem...
   SCSI driver initialized...
   * HARD DISK ID 0 Vendor: SEAGATE Model: ST34573W    Size 8888923
   * HOST ID 7 Vendor:        Model:      Size 0
   Found SCSI disk 4, disk size 8888923
                                                      (If any of the disk
   Disk Partition #1, Size:500000 blocks               partitions is corrupt,
   Mounting volume 4.0.1....Done                       an error message will
   Verifying disk volume 4.0.1,  Please wait...Done    appear in this area.)

   Disk Partition #2, Size:500000 blocks
   Mounting volume 4.0.2....Done
   Verifying disk volume 4.0.2,  Please wait...Done

   Disk Partition #3, Size:200000 blocks
   Mounting volume 4.0.3....Done

   Disk Partition #4, Size:2994150 blocks
   Mounting volume 4.0.4....Done
   Volume 4.0.4 has not been verified...done

Starting TFTP subsystem.....done
Starting FTP subsystem......done
Starting TELNET server......done
Starting pSH+ ...

DryView 8100 Diagnostics: ir8_2_Op3 Mon Feb 1 10:19:23 CST 1999 us600851

Copyright (c) Integrated Systems, Inc., 1992.
Type Help for command information
Welcome to pSOSystem

pSH+>
```

(This is the pShell prompt.)

C. If a Disk Partition is Corrupt, Delete It and Load New IMS Software

1. At the pShell prompt, type **init_vol 4.0.1** (or the volume number of the corrupt partition, if it is not 4.0.1) This will wipe out and reformat the partition.
2. At the pShell prompt, type **shutdown –r** to request shutdown and reboot. (Watch your PC screen as the system initializes. The partition should now verify OK, since it is reformatted with no corrupt data.)
3. Load new IMS Software as instructed in procedure 7-9-13.

D. Shutdown and Reboot from Disk

4. At the pShell prompt, type **shutdown –r** , to request shutdown and reboot.
5. When the system asks you whether you want to shut down the IMS and reboot, select **Yes**.
6. Apply power to the 8100 and watch the terminal for the following message:

```
DryView 8100 (TM)
Copyright (c) Eastman Kodak Company 1999
<ESC> to configure.....
```

7. Press the **Esc** key within 5 seconds after the message appears. The startup parameter information will display, as shown in step 9 of A.
8. When you are asked whether you want to `(M)odify any of this or (C)ontinue?`, select **M** and press **Return**.
9. Press **Return** to accept the default in the first series of questions, until the following text displays:

```
Boot from (D)isk or via (T)ftp over the network?
```

10. Enter **D** and press **Return** to indicate that you want to boot from disk.
11. When you are asked the name of the file to be loaded and started (for booting), enter **boot/bootfile** (in place of **diagfile**) and press **Return**.

E. Restore the Configuration Files

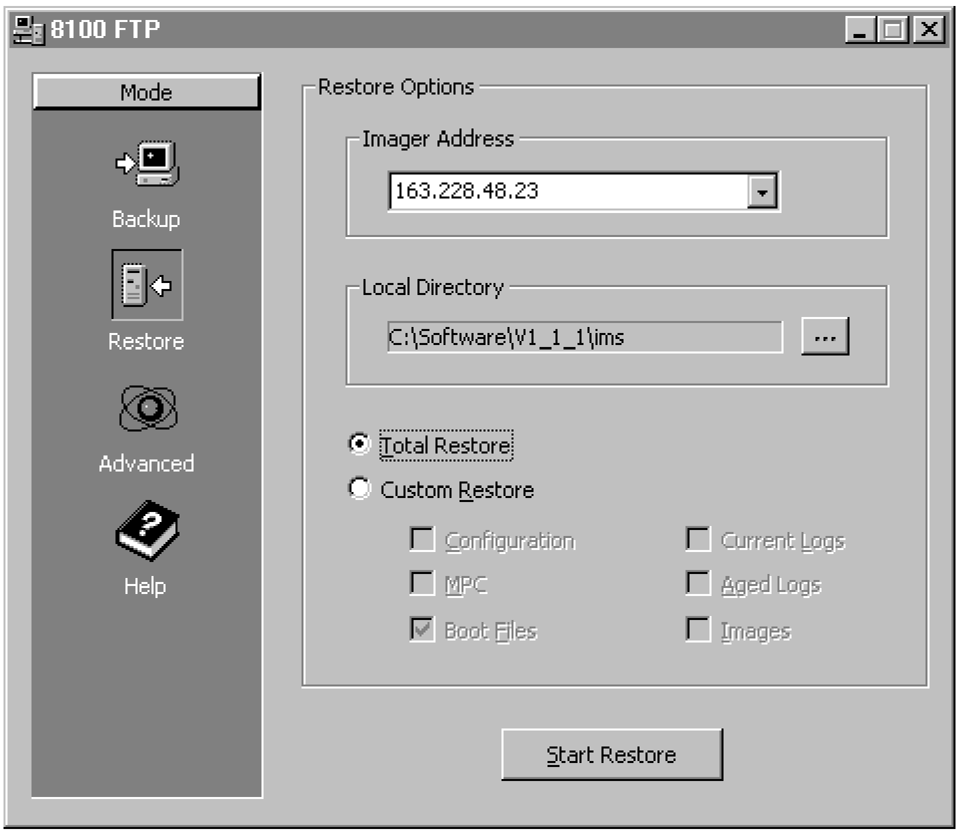
If you have not done so already (in Step C), restore the 8100 configuration files as instructed in procedure 7-9-11. (Restore the most recent configuration.)

7-9-13. Loading New System Software

Use this procedure to load new system software into the 1800. In general, the process includes:

- Backing up the current 8100 configuration files.
- Loading the new system software from CD-ROM (or the hard drive of your PC).
- Restoring the configuration files to the 8100.

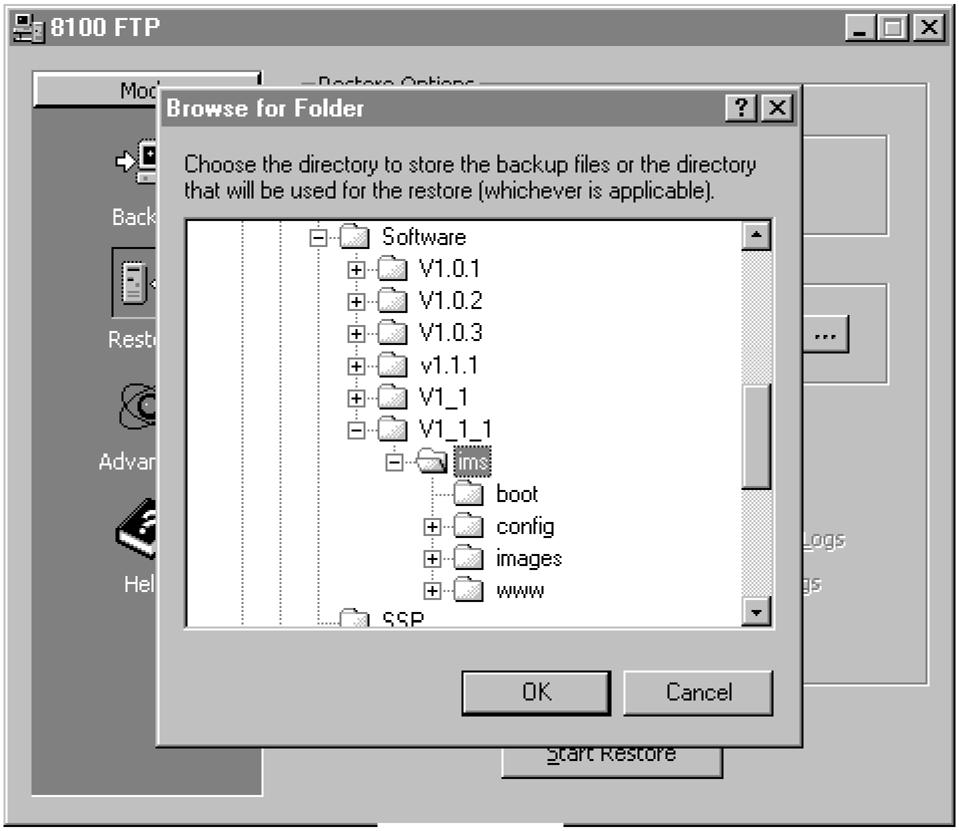
1. Connect your Service PC to the 8100 via the network (procedure 7-9-3) or a direct serial connection (procedure 7-9-5).
2. Back up the 8100 configuration files and copy them to your service PC as instructed in procedure 7-9-10.
3. With the 8100 FTP executable (8100 FTP.exe) launched on your PC, load new system software as follows:



a. Under **Mode**, click on **Restore**.

b. In the **Imager Address** field, enter the IP Address of the 8100. (For direct serial communication, use 10.1.2.1)

c. In the **Local Directory** field, click on the ellipses (**...**) and select the **ims** folder on CD-ROM (or the local drive). Then click on **OK**.



d. On the 8100 FTP Tool window, make sure the **Total Restore** button is selected.

e. Click on **Start Restore.**

Note

If the Service PC screen saver starts during the file transfer, DO NOT press the Spacebar to turn off the screen saver. This will terminate the file transfer.

f. Wait until the message **All files were transferred successfully** appears. Then close the FTP Tool.

4. After loading the new system software, restore the 8100 configuration files as instructed in procedure 7-9-11.

7-9-14. Configuring Your PC for Direct Serial Connection with MPC

The following configuration procedures are required before you can use your Service PC to communicate with MPC via a serial port connection (rather than via the network):

- You must install a direct connection modem driver in your PC.
- You must configure your PC for using dial-up networking with TCP/IP in Windows 95.

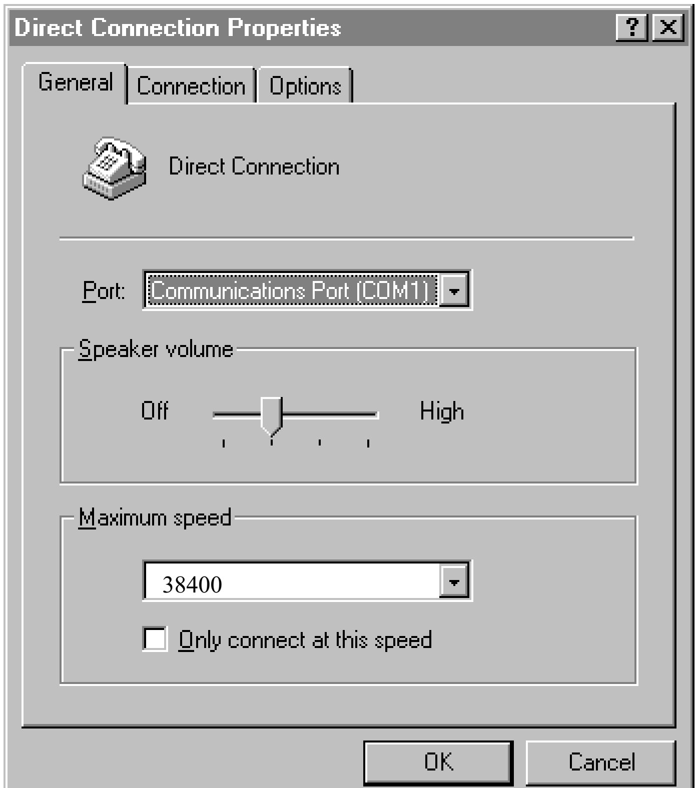
Normally these are "one-time" procedures, done during training on the 8100.

7-9-14-1. Installing a Direct Connection Modem Driver on Your PC

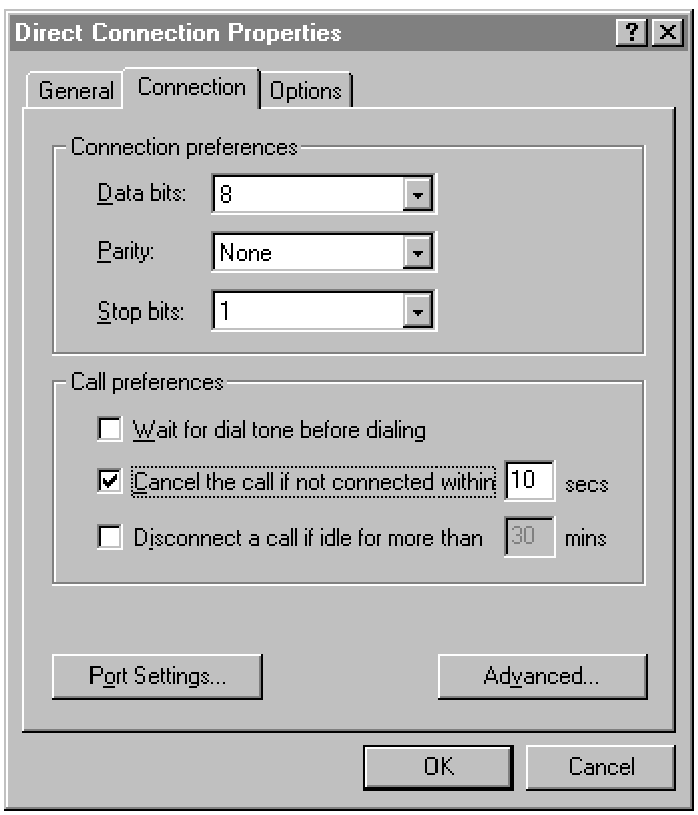
1. Obtain the Direct Connection Modem driver file: mdmcbx4.inf. (The file should be stored in your Service Collection on CD-ROM.)
2. In Windows, click on **Start**/ **Settings**/ and **Control Panel**.
3. Open the **Modems** icon.
4. Click on the **Add** button on the Modems Properties screen.
5. Select **Other** on the Install New Modem screen.
6. Click on the **Don't detect my modem** check box, and then click on the **Next** button.
7. Click on **Have Disk**, and in the next dialog box browse to the location of the mdmcbx4.inf file.
8. Select that file and **Direct Connection**. Then click on **Next**.
9. Select the serial port (COM1) that your PC will use for direct connection, and click on **Next**.
10. When done, click on **Finish**.
11. Configure your PC for dial-up networking as instructed in the next paragraph.

7-9-14-2. Configuring Your PC for Dial-up Networking

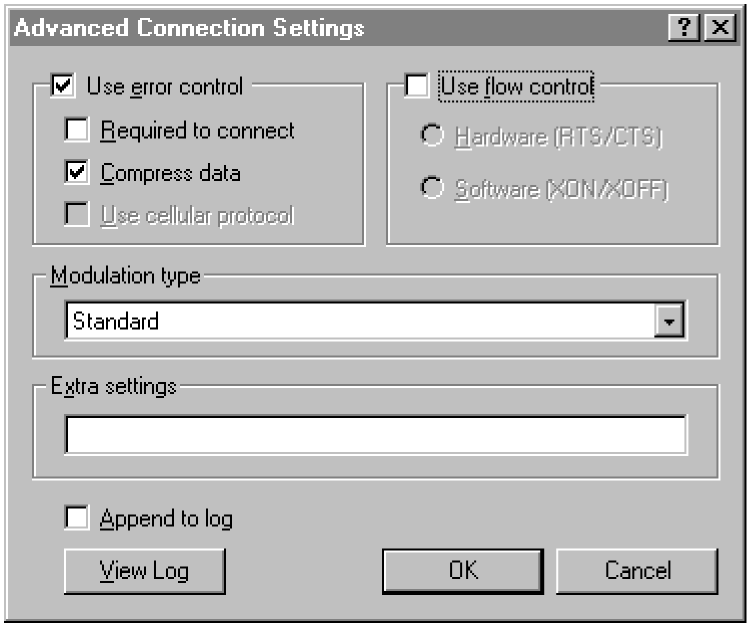
1. Click on **Start** / **Programs** / **Accessories** and **Dial-up Networking**. Then click on **Make New Connection**.
2. Enter a name for the new connection, such as "8100 MPC Direct."
3. Select **Direct Connection** as the device to use, then click on the **Configure**... button.
4. On the **General** tab, make sure that the **Port** is set to the serial port you are using.
5. Set **Maximum Speed** to **38400**. Then select the **Connection** tab.



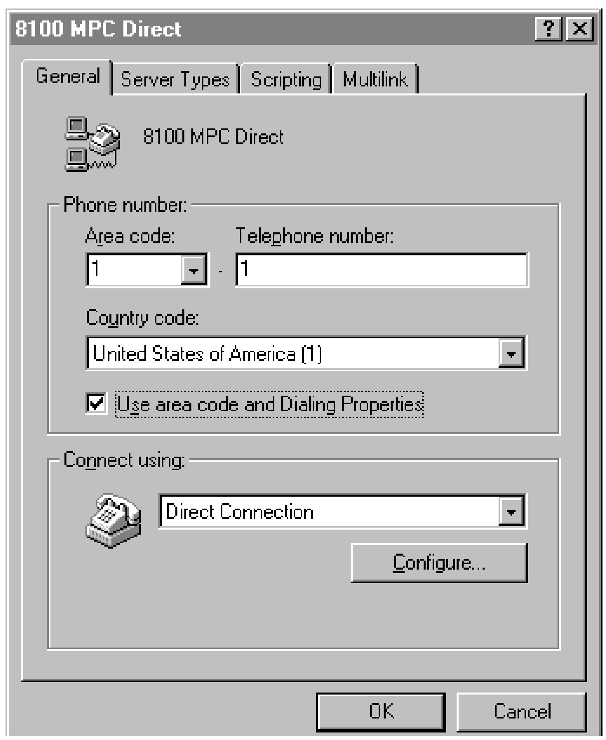
6. Verify that **Data bits** = **8**, **Parity = None** and **Stop bits = 1**. Then select the **Advanced** button.



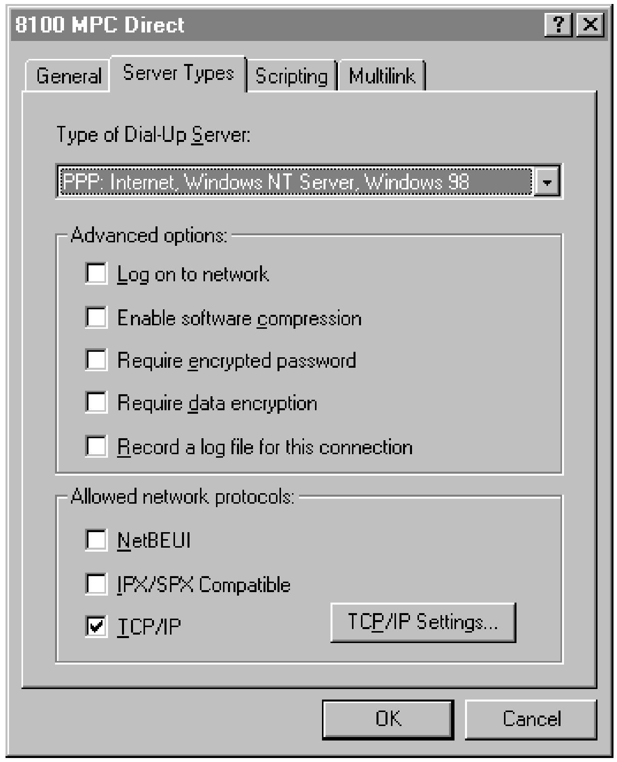
7. Make sure that **Use Flow Control** is not checked. Then click **OK** twice.



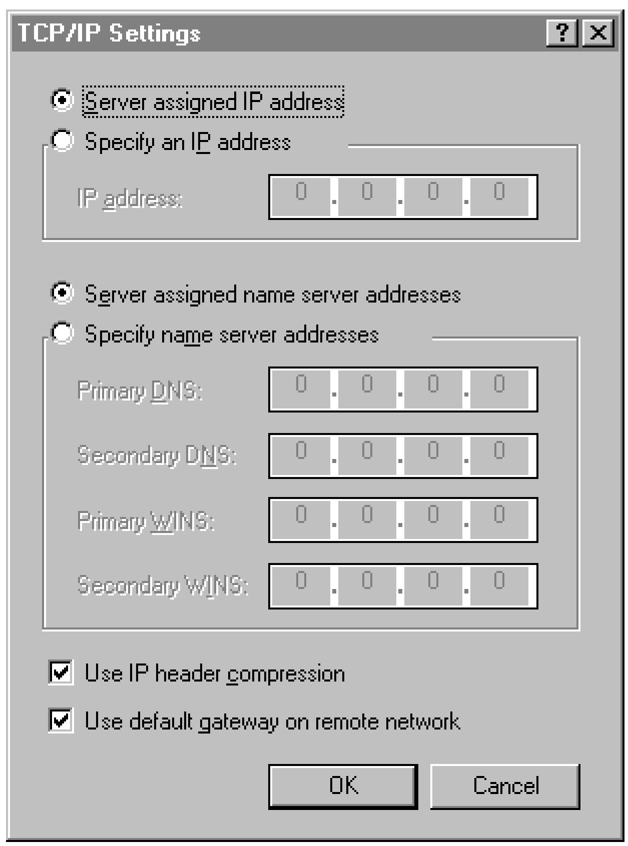
8. Select **Next**. Then enter **1** for the **Area Code** and **1** for the **Telephone Number**.



9. Select **Next**, then **Finish**.
10. Right-click the icon for the new connection (e.g., **8100 MPC Direct**), and select **Properties**.
11. Select **Server Types**, and make sure that only **TCP/IP** is checked in **Allowed network protocols**. Then click on the **TCP/IP Settings...** button.



12. Make sure that both of the following items are checked:
    Use IP header compression and **Use default gateway on remote network**.
13. Click **OK** until the application is closed.



Section 8 – Illustrated Parts Breakdown

Figure 8-0. SYSTEM OVERVIEW

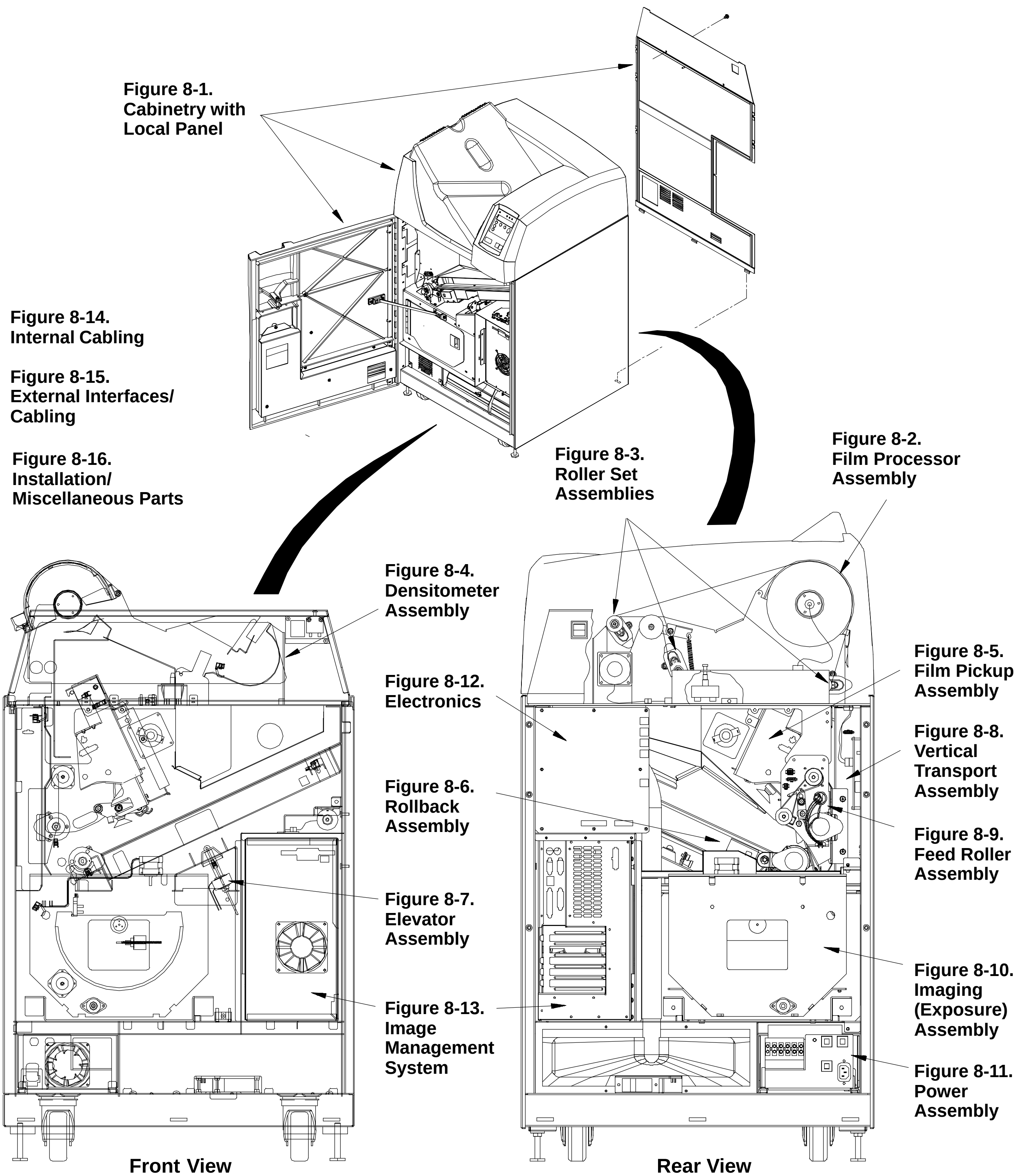


Figure 8-1. CABINETRY WITH LOCAL PANEL

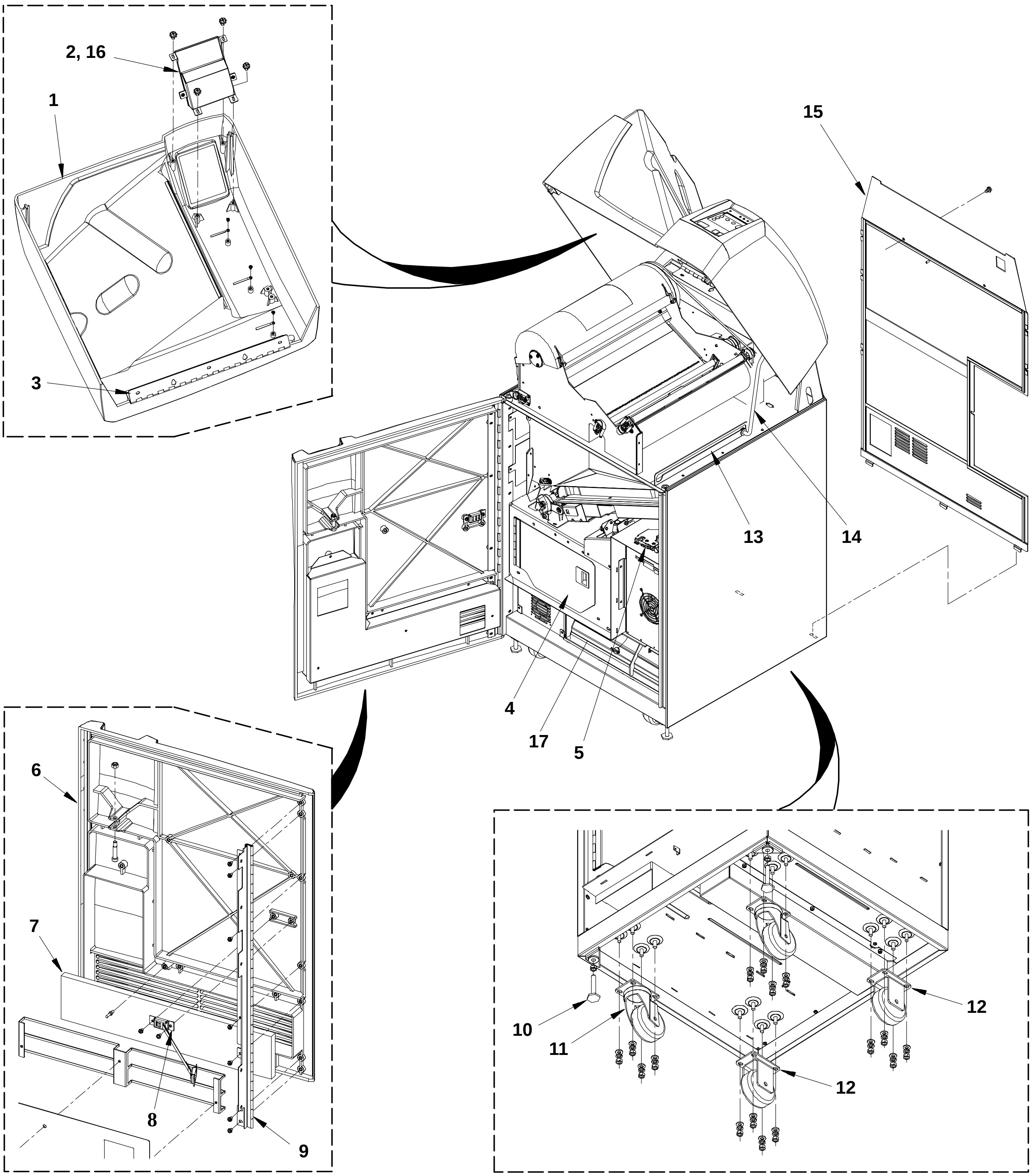


Figure 8-1. CABINETRY WITH LOCAL PANEL

Item No.	Part Number	Description	Qty
1	96–0000–3453–6	HOOD ASSEMBLY (Includes items 2 and 3)	1
2	96–0000–2962–7	LOCAL PANEL ASSEMBLY	1
3	96–0000–2563–3	HINGE, Hood	1
4	96–0000–3509–5	PLATEN ACCESS DOOR ASSEMBLY	1
5	96–0000–2906–4	LATCH, Automatic, Front Door	1
6	96–0000–3594–7	FRONT DOOR ASSEMBLY (Includes items 7 though 9)	1
7	96–0000–2755–5	FILTER, Door	1
8	96–0000–2534–4	LANYARD, Front Door	1
9	96–0000–2533–6	HINGE, Front Door	1
10	96–0000–1560–0	LEVELER, Leg	2
11	26–1011–7895–7	CASTER, Swivel	2
12	26–1011–7896–5	CASTER, Fixed	2
13	96–0000–2565–8	GUIDE, Prop–Rod, Hood	1
14	96–0000–2940–3	PROP–ROD ASSEMBLY, Hood	1
15	96–0000–3233–2	BACK PANEL ASSEMBLY	1
16	74–0500–5792–1	CABLE ASSEMBLY, Local Panel	1
17	96–0000–1639–2	FILTER KIT	1

Figure 8-2. FILM PROCESSOR ASSEMBLY

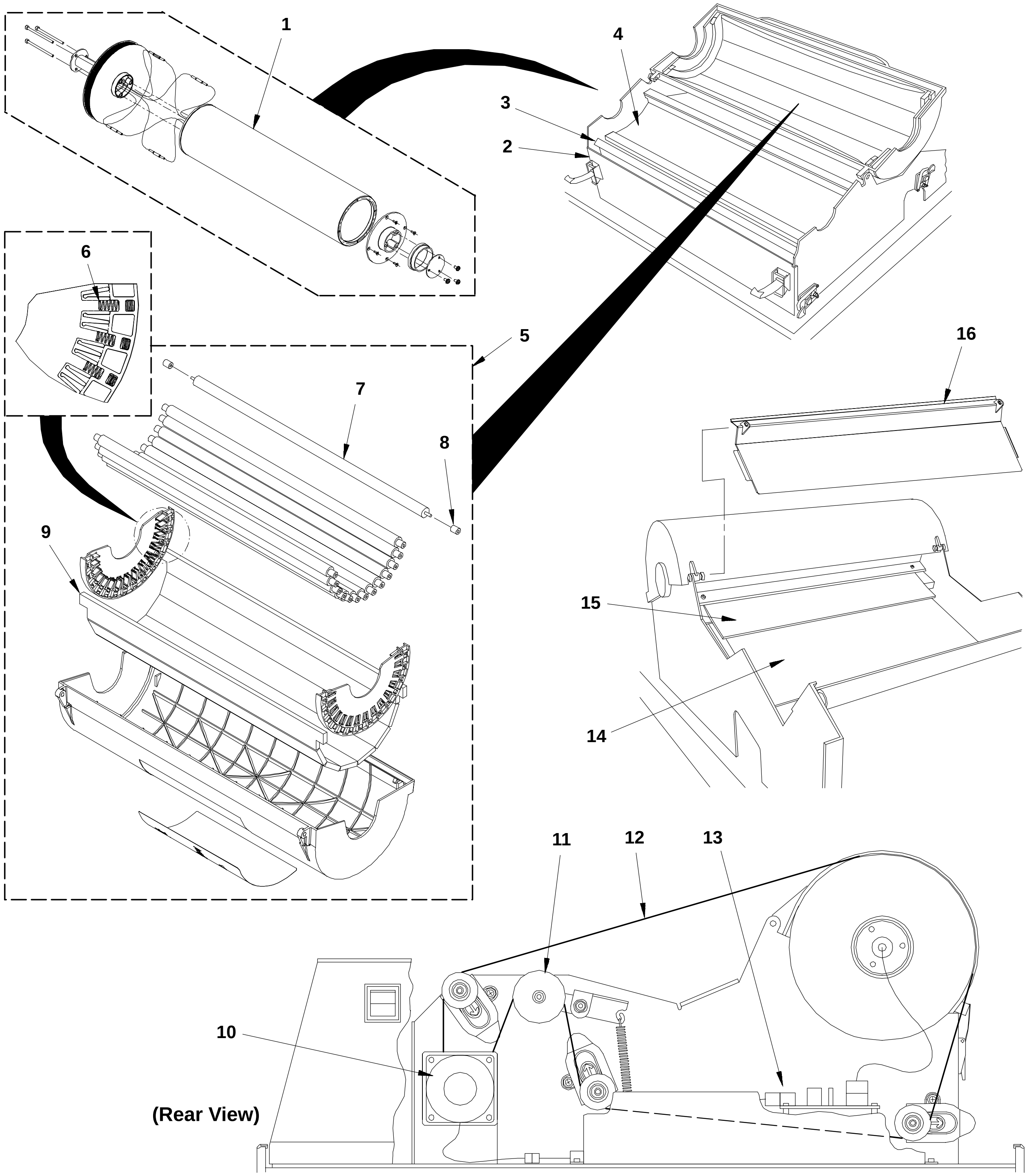


Figure 8-2. FILM PROCESSOR ASSEMBLY

Item No.	Part Number	Description	Qty
1	74–0500–5495–1	DRUM ASSEMBLY KIT	1
2	96–0000–4028–5	LATCH PLATE ASSEMBLY	1
3	96–0000–2375–2	GUIDE, Left Vertical, Processor	1
4	96–0000–1368–8	INSULATOR, Lower Processor	1
5	74–0500–5501–6	PROCESSOR COVER ASSEMBLY KIT (Includes items 6 through 9)	1
6	Not Available	SPRING, Processor Roller	28
7	96–0000–0405–9	ROLLER, Processor, Aluminum	14
8	96–0000–0404–2	BEARING, Pressure Roller	28
9	96–0000–3026–0	INSULATION, Cover, Processor	1
10	96–0000–4001–2	MOTOR, Processor, Step5	1
11	96–0000–2951–0	BELT TENSIONER ASSEMBLY	1
12	96–0000–2878–5	BELT	1
13	96–0000–3585–5	PROCESSOR INTERFACE BOARD ASSEMBLY	1
14	96–0000–0989–2	PLATE, Cooling, Post Processor	1
15	78–8075–4070–9	DIVERTER AND FELT ASSEMBLY KIT	1
16	96–0000–3975–8	THERMAL SHIELD ASSEMBLY	1

Figure 8-3. ROLLER SET ASSEMBLIES

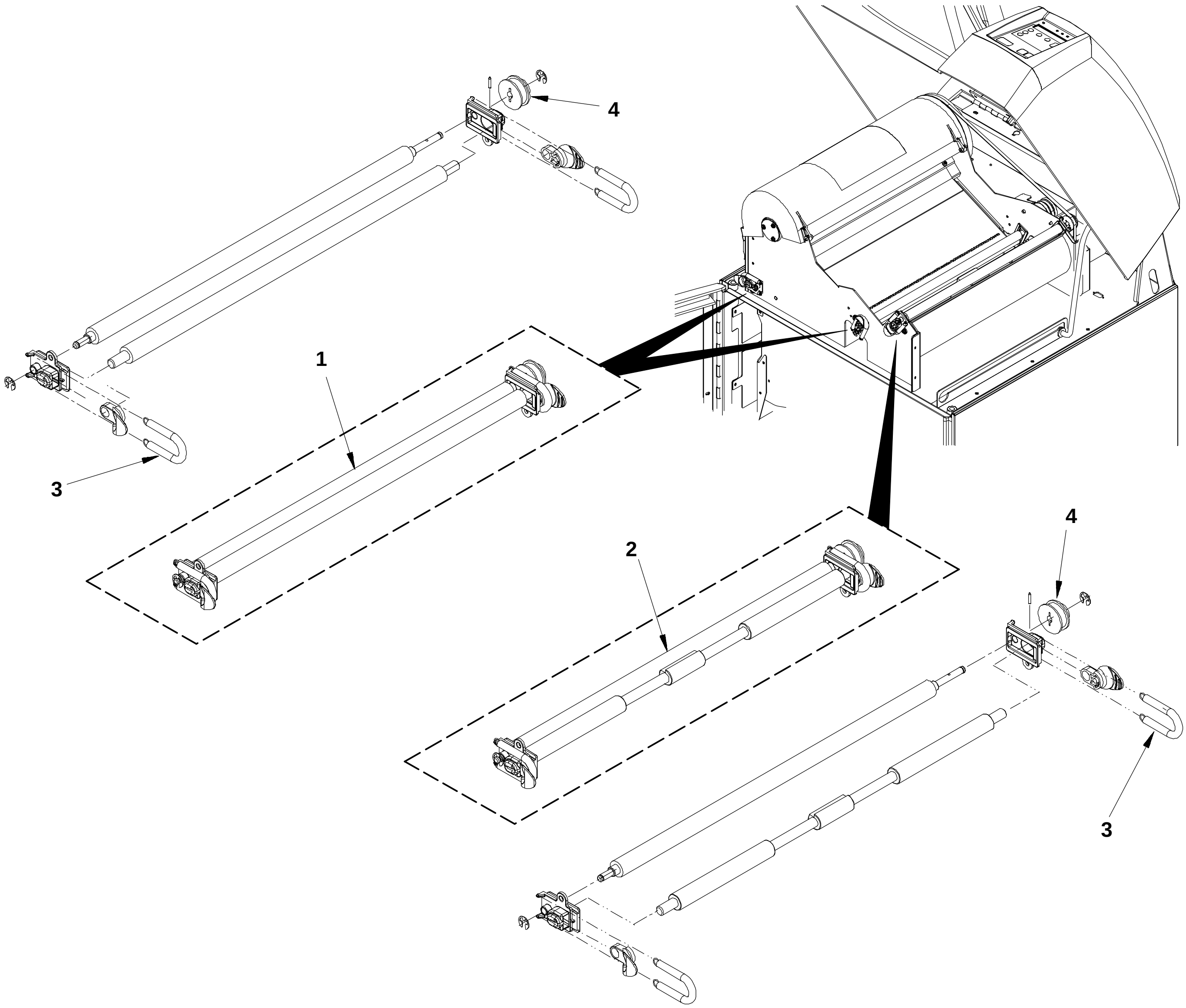


Figure 8-3. ROLLER SET ASSEMBLIES

Item No.	Part Number	Description	Qty
1	96–0000–2956–9	ROLLER SET ASSEMBLY (Includes items 3 and 4)	2
2	96–0000–2957–7	ROLLER SET EXIT ASSEMBLY (Includes items 3 and 4)	1
3	96–0000–2668–0	SPRING, External, SST, .75 Long (2 per roller set)	6
4	96–0000–1324–1	PULLEY, 40dp, 40 Tooth (1 per roller set)	3

Figure 8-4. DENSITOMETER ASSEMBLY

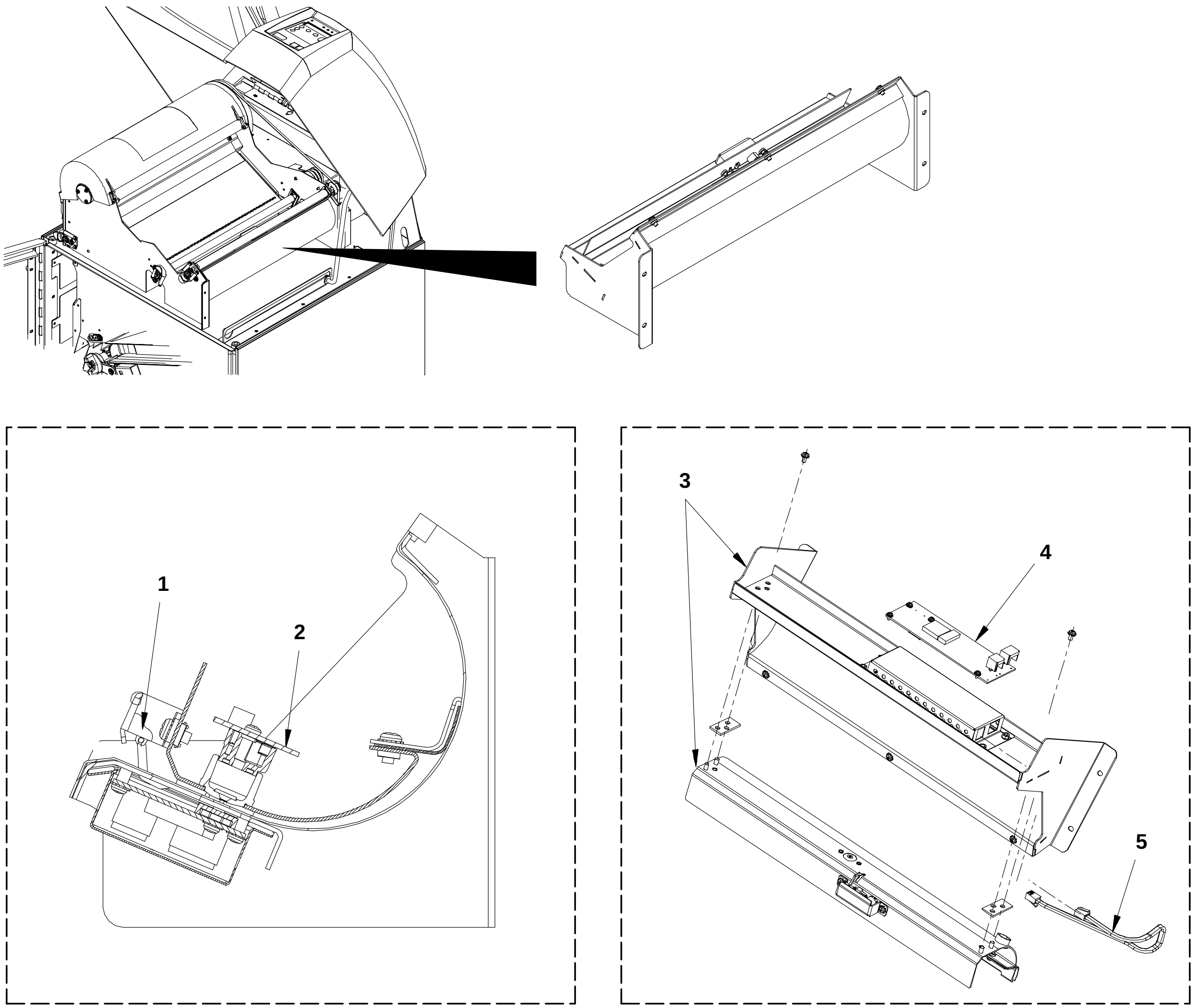


Figure 8-4. DENSITOMETER ASSEMBLY

Item No.	Part Number	Description	Qty
1	96–0000–0486–9	SWITCH, Flag, Optical (S6)	1
2	96–0000–1357–1	PC BOARD ASSEMBLY, Densitometer Light Source	1
3	96–0000–1307–6	TURNAROUND, Sheet Metal	1
4	96–0000–3898–2	DENSITOMETER BOARD ASSEMBLY	1
5	96–0000–2510–4	CABLE, Densitometer, MicroComm	1

Figure 8-5. FILM PICKUP ASSEMBLY

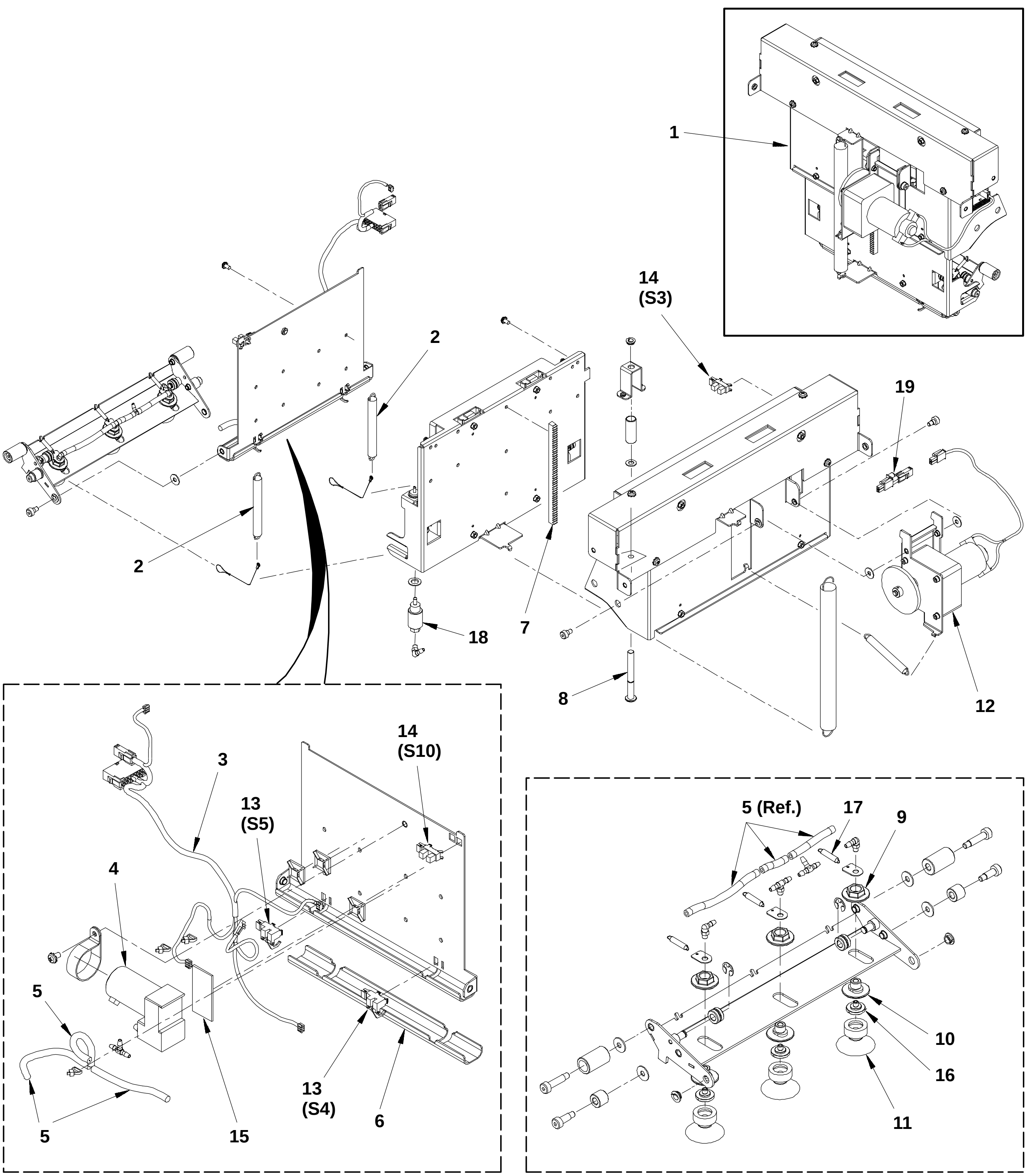


Figure 8-5. FILM PICKUP ASSEMBLY

Item No.	Part Number	Description	Qty
1	96–0000–0420–8	PICKUP ASSEMBLY (Includes items 2 through 19)	1
2	74–0500–4076–0	SPRING, Cup Plate, Film Pickup	2
3	96–0000–2846–2	HARNESS, Pickup	1
4	42–0010–2930–7	VACUUM PUMP ASSEMBLY (Includes foam tape, Item 15)	1
5	96–0000–2967–6	TUBING, Silicone (Cut to 60, 108 or 111 mm lengths as needed)	1
6	96–0000–0953–8	PAD, Heel, Film Pickup	1
7	96–0000–0435–6	RACK, Film Pickup	1
8	96–0000–1388–6	PLUNGER, Valve, Film Pickup	1
9	96–0000–4219–0	SLIDER, Top, Film Pickup	3
10	96–0000–4220–8	SLIDER, Bottom, Film Pickup	3
11	78–8094–5694–6	CUP, Round, Film Pickup	3
12	74–0500–4932–4	PICKUP MOTOR ASSEMBLY (DCM2)	1
13	96–0000–0486–9	SWITCH, Flag, Optical (S4, S5)	2
14	96–0000–0482–8	SWITCH, Interrupt, Optical (S3, S10)	2
15	96–0000–4233–1	TAPE, VHB, Acrylic Foam	1
16	96–0000–3690–3	SCREW, Cup, Film Pickup	3
17	96–0000–1328–2	SPRING, Film Cups/Platen Sliders	3
18	96–0000–1187–2	VALVE, Poppet, Film Pickup	1
19	70–0701–4519–1	CABLE, Filter, Pickup Motor	1

Figure 8-6. ROLLBACK ASSEMBLY

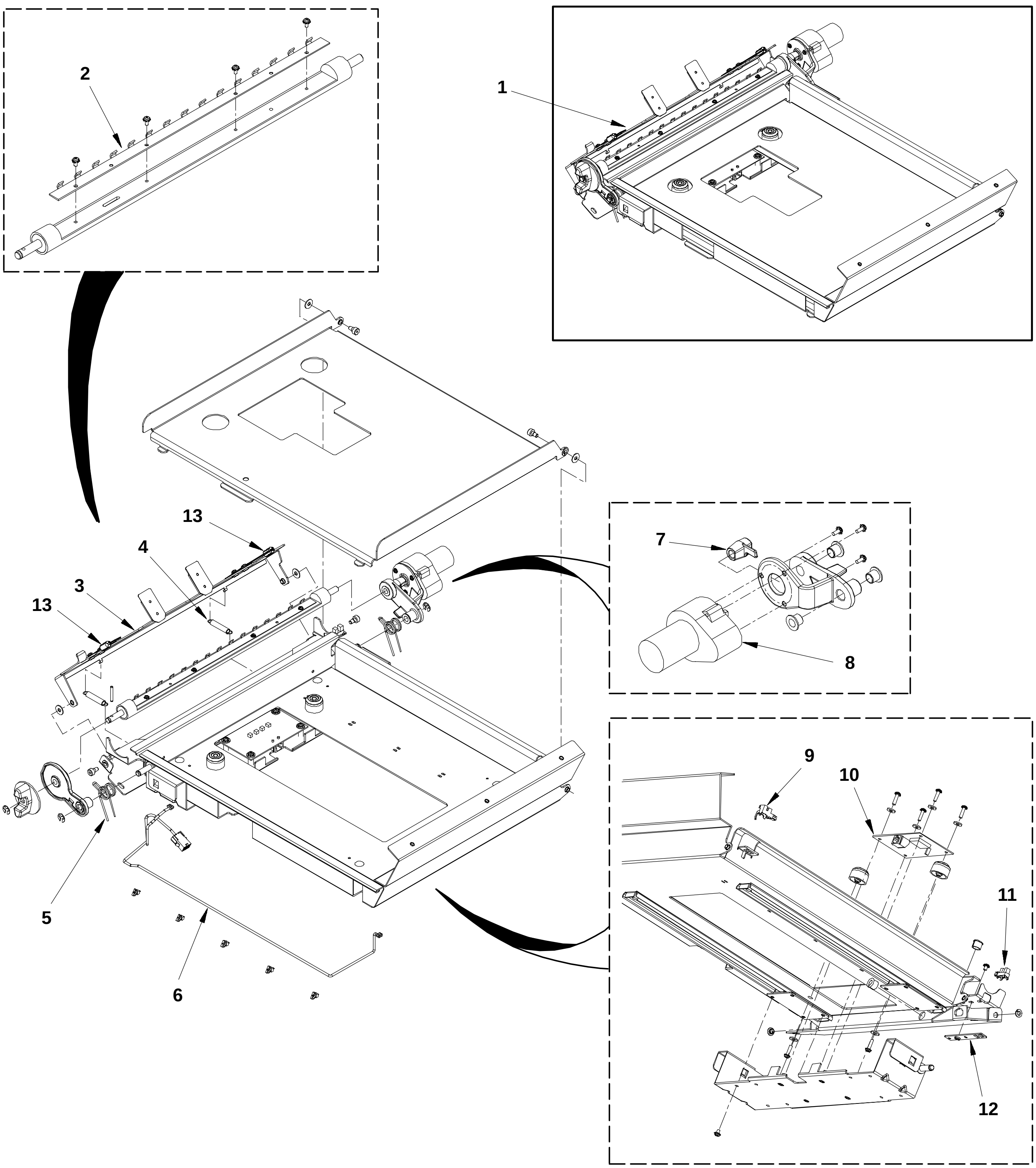


Figure 8-6. ROLLBACK ASSEMBLY

Item No.	Part Number	Description	Qty
1	96–0000–2811–6	ROLLBACK ASSEMBLY (Includes items 2 through 13)	1
2	96–0000–2356–2	TEETH ROLLER, Rollback	1
3	96–0000–0864–7	GUARD, Film, Rollback	1
4	96–0000–2669–8	SPRING, External, .30 D x .037 W x 1.75 Long	2
5	96–0000–2151–7	SPRING, Rollback	2
6	96–0000–2844–7	HARNESS, Rollback Sensor	1
7	96–0000–3591–3	COUPLER, Roller, Rollback	1
8	96–0000–2476–8	MOTOR, DC, Rollback (DCM1)	1
9	96–0000–0486–9	SWITCH, Flag, Optical (S1)	1
10	96–0000–5412–0	PCB, Barcode Reader	1
11	96–0000–0482–8	SWITCH, Interrupt, Optical (S2)	1
12	96–0000–1371–2	MOUNT, Sensor, Home, Rollback	1
13	96–0000–4221–6	TAB, Separator, Film	2

Figure 8-7. ELEVATOR ASSEMBLY

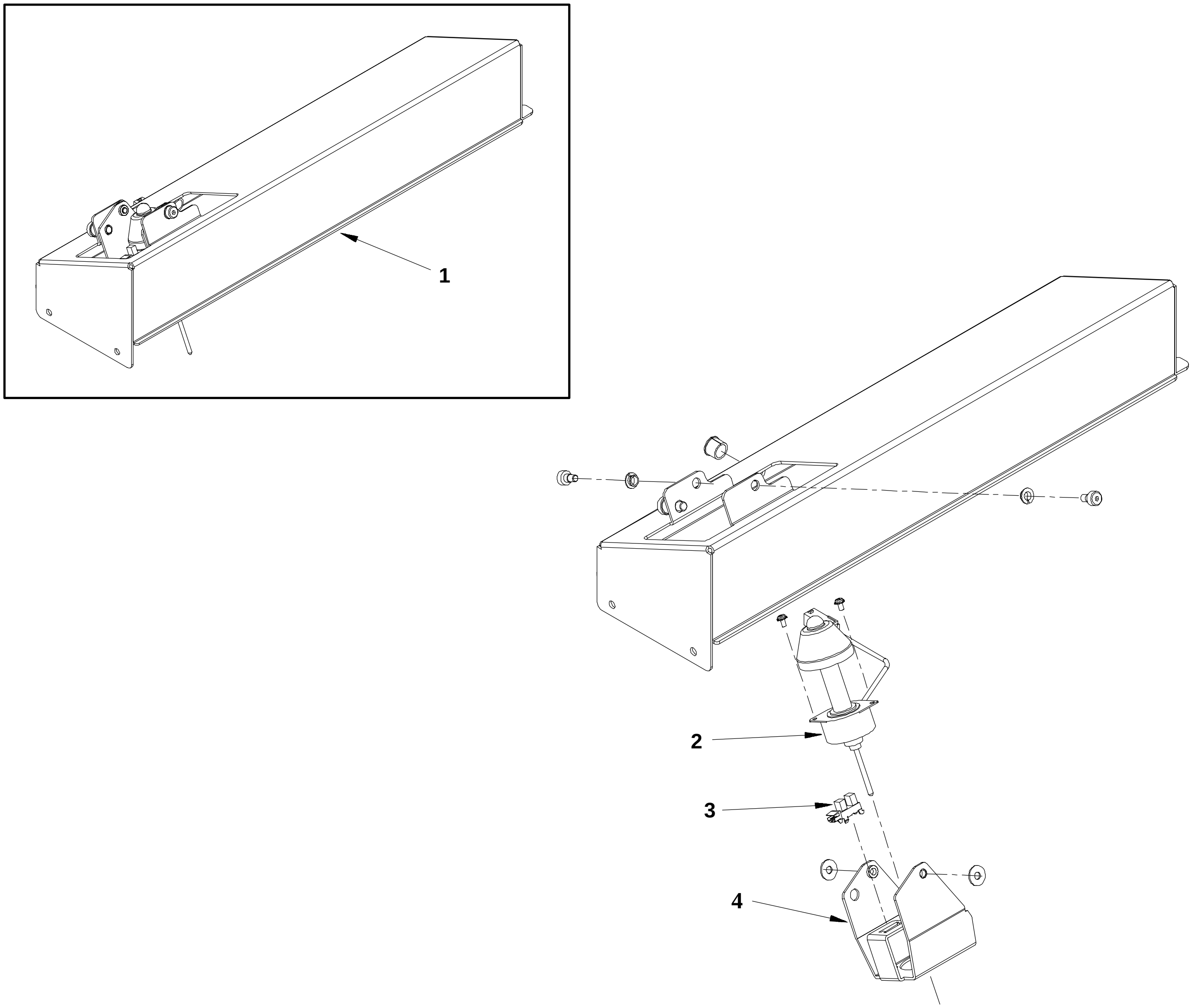


Figure 8-7. ELEVATOR ASSEMBLY

Item No.	Part Number	Description	Qty
1	96–0000–2812–4	ELEVATOR ASSEMBLY (Includes items 2 through 4)	1
2	96–0000–5407–0	ELEVATOR MOTOR ASSEMBLY (Step8)	1
3	96–0000–0482–8	SWITCH, Interrupt, Optical (S12)	1
4	96–0000–1376–1	MOTOR MOUNT, Elevator	1

Figure 8-8. VERTICAL TRANSPORT ASSEMBLY

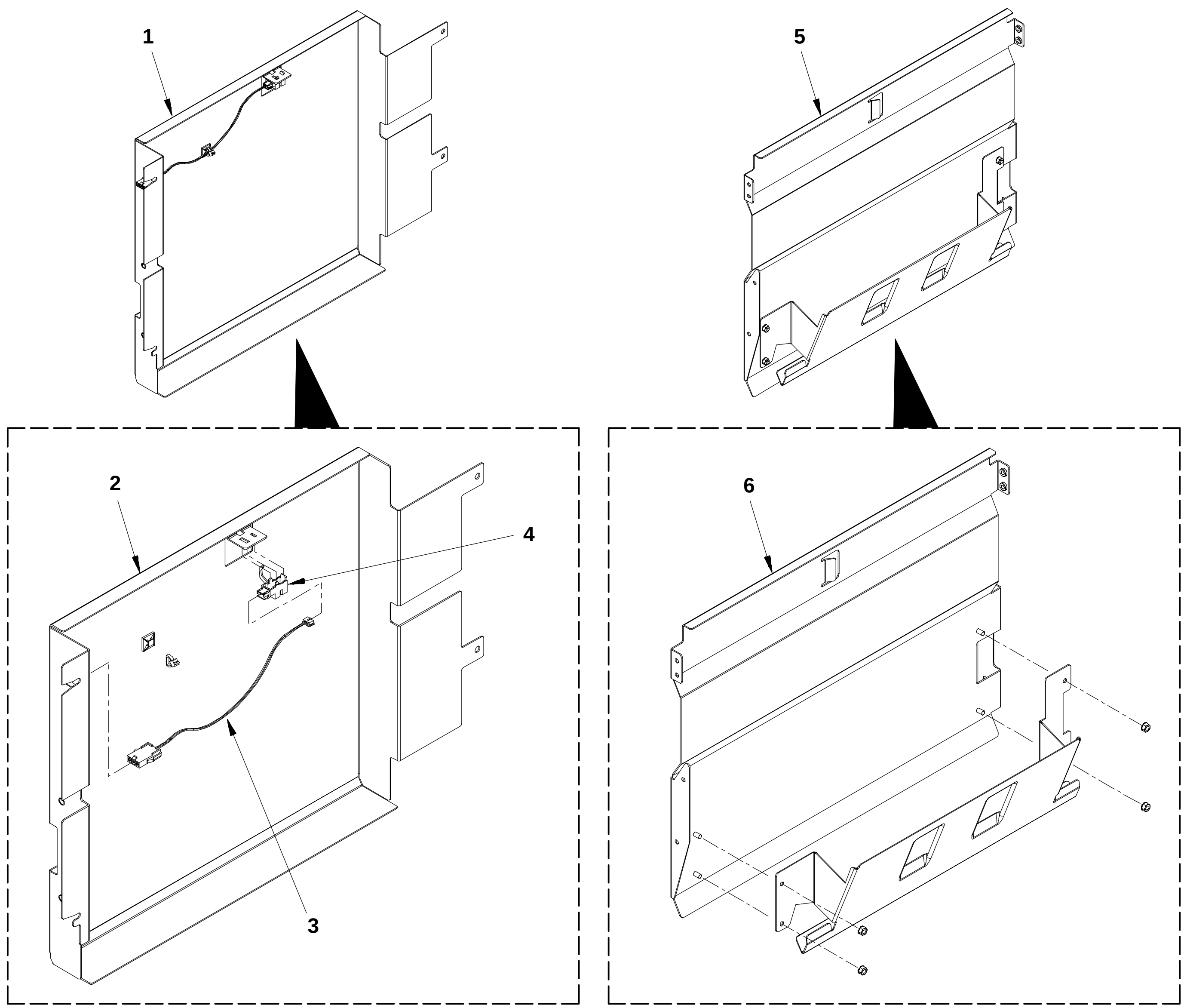


Figure 8-8. VERTICAL TRANSPORT ASSEMBLY

Item No.	Part Number	Description	Qty
1	96–0000–2949–4	LEFT VERTICAL TRANSPORT ASSEMBLY (Includes items 2 through 4)	1
2	96–0000–0851–4	GUIDE, Vertical, Left Post Platen	1
3	96–0000–2507–0	CABLE, Sensor, Transport	1
4	96–0000–0486–9	SWITCH, Flag, Optical (S8)	1
5	96–0000–2948–6	RIGHT VERTICAL TRANSPORT ASSEMBLY (Includes item 6)	1
6	96–0000–1631–9	GUIDE, Vertical, Right Post Platen	1

Figure 8-9. FEED ROLLER ASSEMBLY

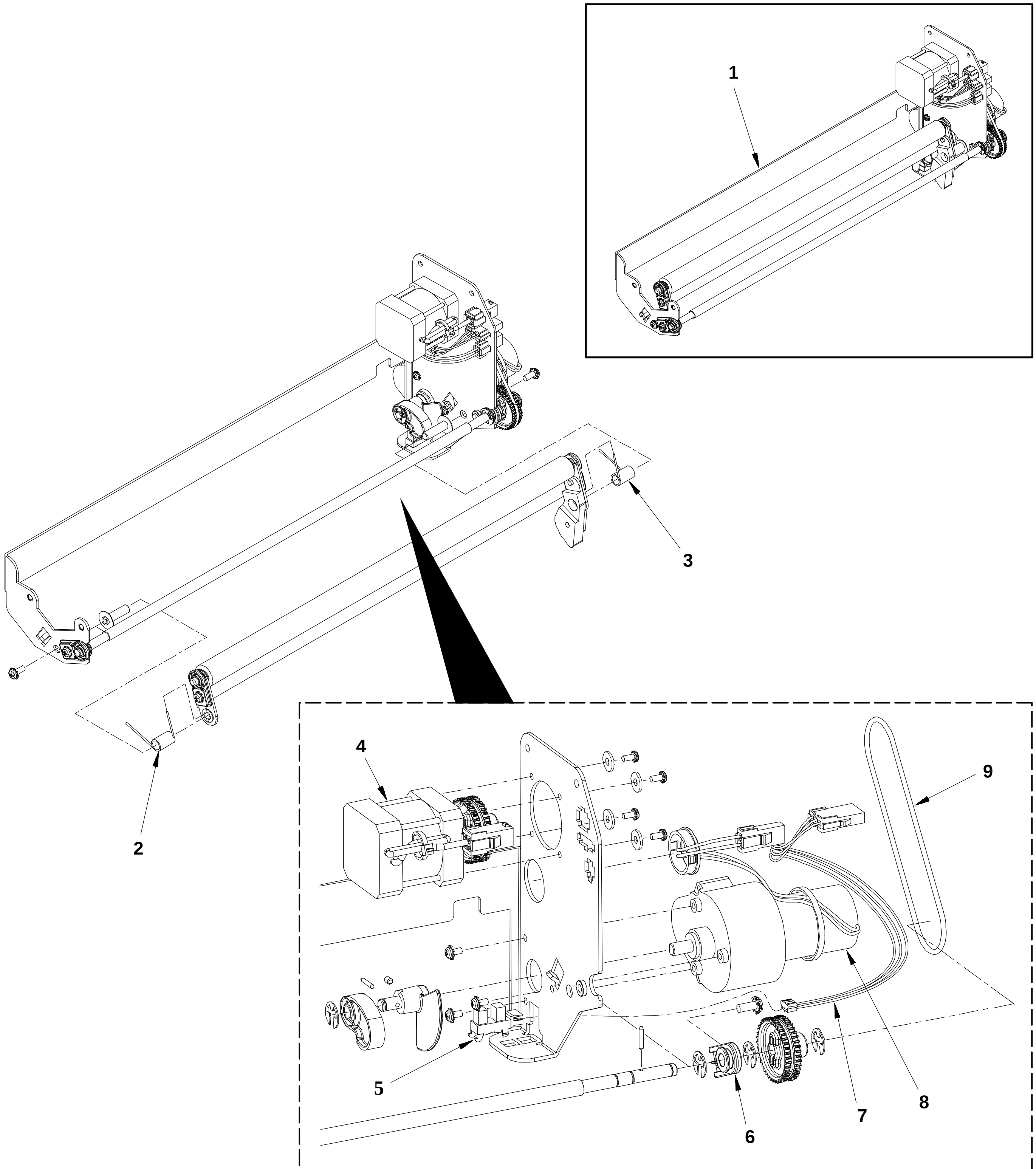


Figure 8-9. FEED ROLLER ASSEMBLY

Item No.	Part Number	Description	Qty
1	96–0000–2834–8	FEED ROLLER ASSEMBLY (Includes items 2 through 9)	1
2	96–0000–1383–7	SPRING, Torsion, Left Handed	1
3	96–0000–1384–5	SPRING, Torsion, Right Handed	1
4	41–2301–2356–8	FEED ROLLER STEPPER MOTOR ASSEMBLY (Step1)	1
5	96–0000–0482–8	SWITCH, Interrupt, Optical (S11)	1
6	96–0000–1004–9	BEARING, Roller, Individual	2
7	96–0000–2850–4	CABLE, Sensor, Feed Rollers	1
8	96–0000–1467–8	MOTOR, DC, Roller Open (DCM4)	1
9	96–0000–4200–0	BELT	1

Figure 8-10. IMAGING (EXPOSURE) ASSEMBLY

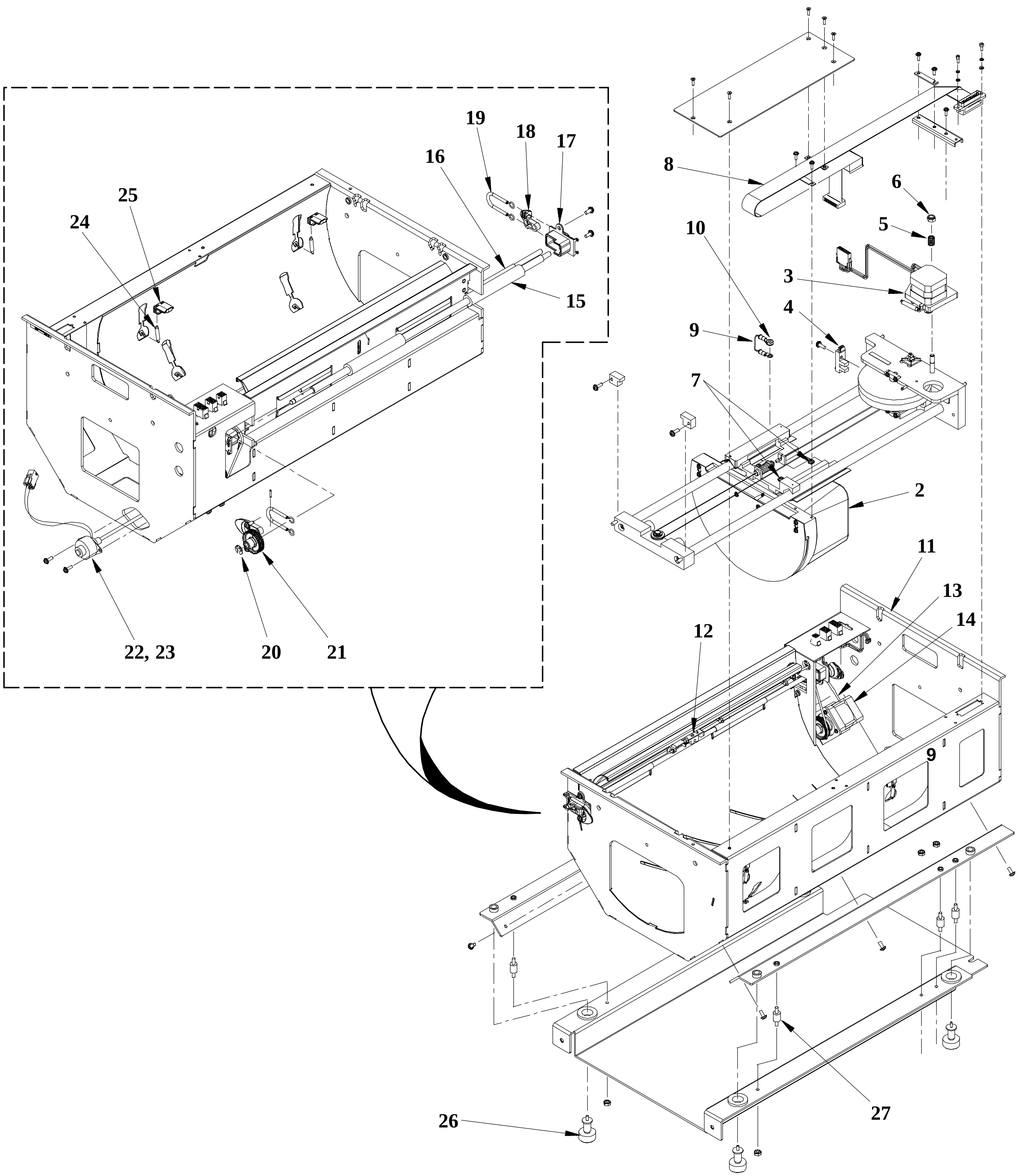


Figure 8-10. IMAGING (EXPOSURE) ASSEMBLY

Item No.	Part Number	Description	Qty
1	96–0000–2892–6	IMAGING (EXPOSURE) ASSEMBLY	1
2	74–0500–5496–9	SCANNER MODULE KIT (Includes Optics Module, Optics Translation Module and items 3 through 7)	1
3	96–0000–5458–3	STEPPER MOTOR MOUNTING ASSEMBLY (Step4)	1
4	70–0701–4483–0	SWITCH, Flag, Optical (S7)	1
5	96–0000–2577–3	COMPRESSION SPRING, Stepper Motor	1
6	96–0000–2573–2	NUT, Hex, Metric, M6 x 1.0	1
7	26–1003–7485–4	SCREW, Pan, Sems, M4, 7 x 16	3
8	96–0000–2864–5	CABLE, Ribbon, Optics Module	1
9	74–0500–5708–7	CABLE, Ground Strap	1
10	26–1006–2032–2	NUT, Keps, 8–32 UNC, Blk	1
11	96–0000–1028–8	PLATEN ASSEMBLY (Includes items 12 through 27)	1
12	96–0000–0486–9	SWITCH, Flag, Optical (S6)	1
13	96–0000–4200–0	BELT	1
14	41–2301–2356–8	STEPPER MOTOR ASSEMBLY (Step2)	1
15	44–0022–7807–3	ROLLER, Drive, Platen	1
16	44–0022–7808–1	ROLLER, Nip, Platen	1
17	80–9550–2862–8	BEARING BLOCK, Base	2
18	96–0000–0383–8	BEARING BLOCK, Slide	2
19	96–0000–2624–3	SPRING, External	2
20	12–7996–2818–0	E–RING, 1/4 in. Shaft Dia.	1
21	96–0000–4167–1	SPROCKET, 32dp, .098 40 Tooth, Platen	1
22	96–0000–1524–6	PLATEN FILM CENTERING ASSEMBLY (Step7)	1
23	96–0000–0886–0	ACTUATOR, Motor, Platen Centering	1
24	96–0000–1328–2	SPRING, Film Cups/Platen Sliders	2
25	96–0000–0485–1	SLIDER, Film Positioning	2
26	96–0000–1325–8	SCREW, Shoulder, Platen	4
27	44–0022–7602–8	MOUNT, Vibration Control, Polyurethane	6

Figure 8-11. POWER ASSEMBLY

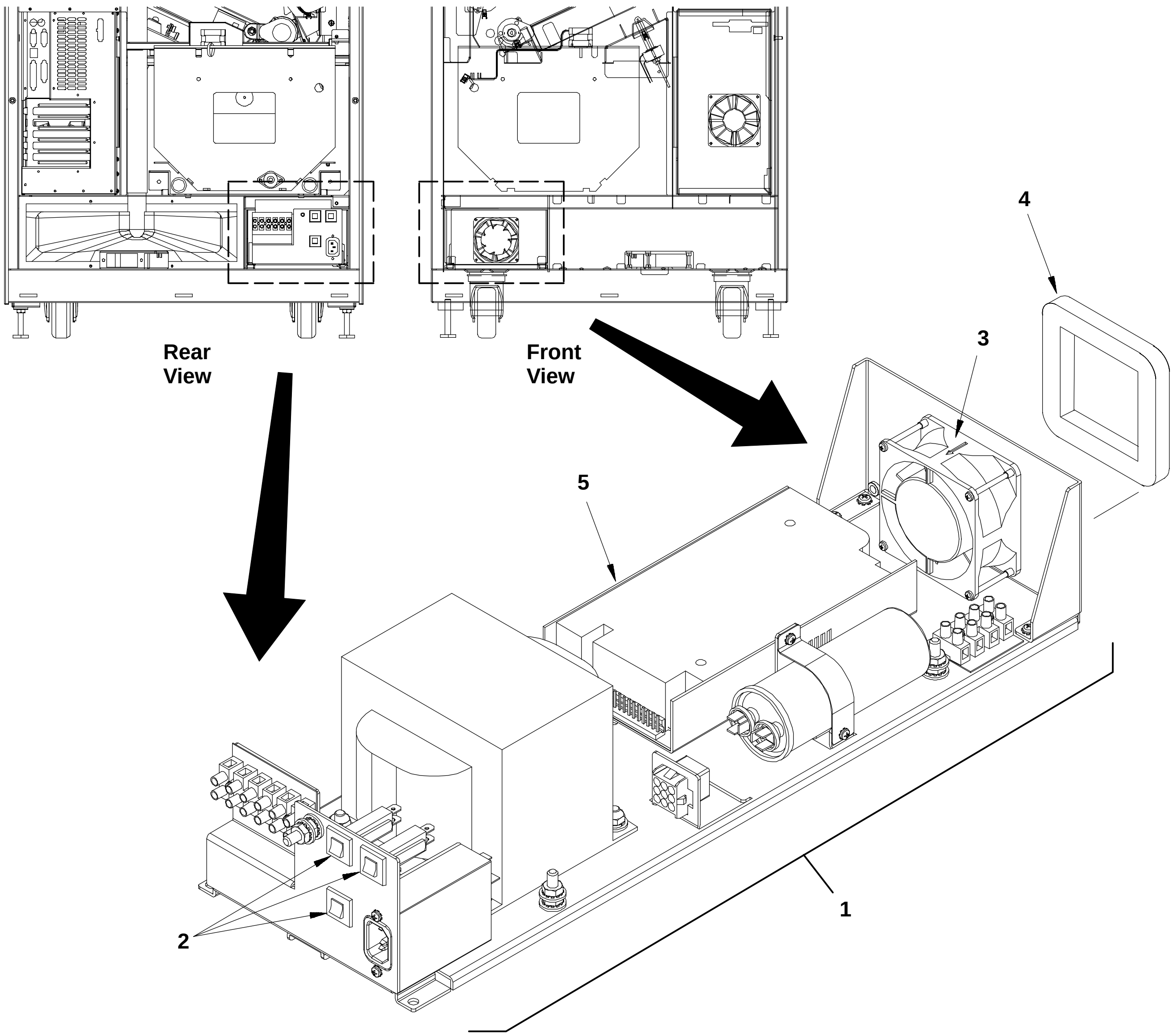


Figure 8-11. POWER ASSEMBLY

Item No.	Part Number	Description	Qty
1	74–0500–5498–5	POWER MODULE KIT (Includes items 2 through 4)	1
2	96–0000–3705–9	CIRCUIT BREAKER (CB1, CB2, CB3)	3
3	96–0000–3703–4	FAN, Power Module	1
4	96–0000–2174–9	SEAL, Power Module	1
5	96–0000–3709–1	POWER SUPPLY	1

Figure 8-12. ELECTRONICS

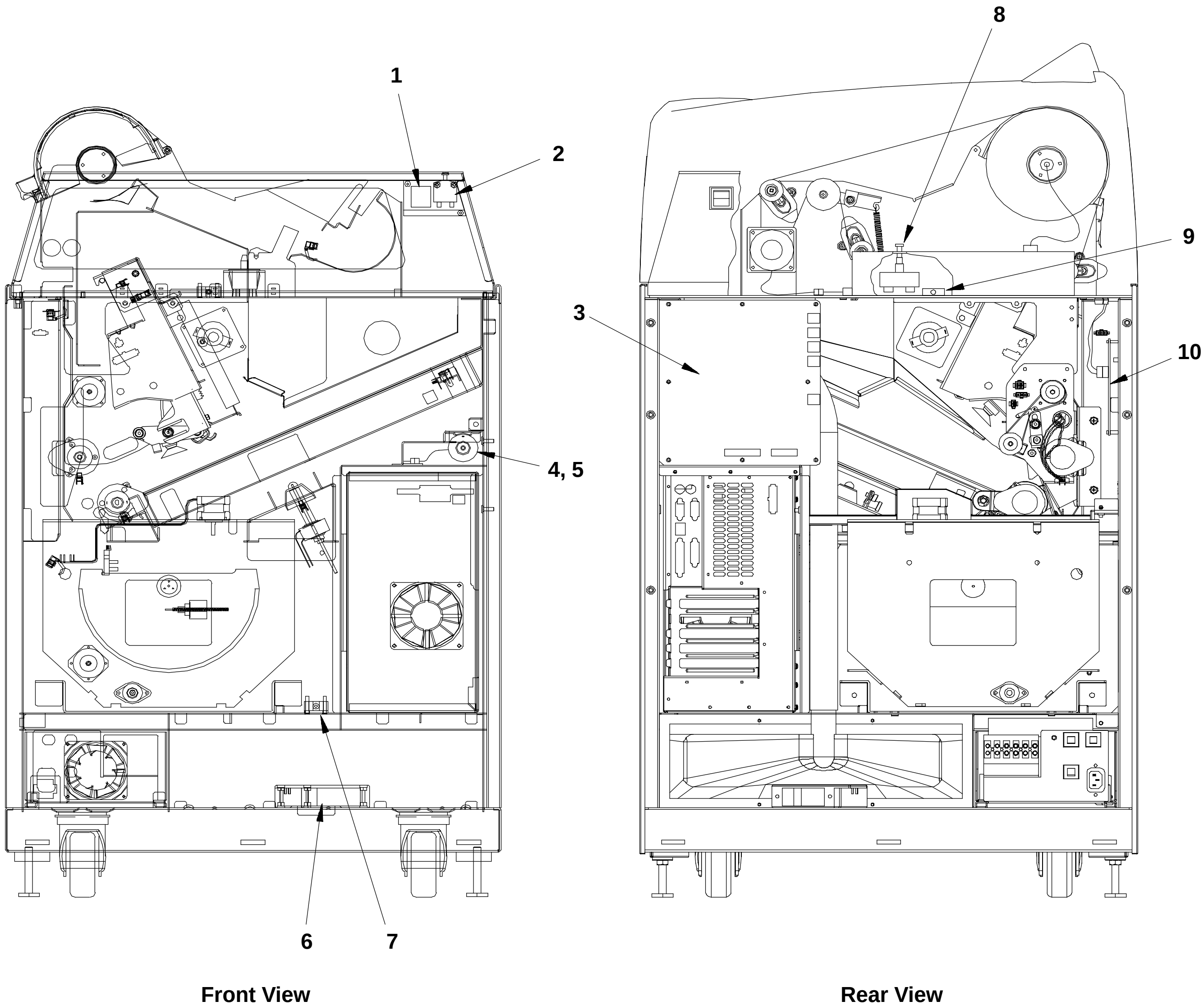


Figure 8-12. ELECTRONICS

Item No.	Part Number	Description	Qty
1	96–0000–2094–9	SWITCH, Power	1
2	96–0000–2111–1	INTERLOCK, Top Hood	1
3	96–0000–2876–9	BOARD, MCS	1
4	96–0000–2538–5	SOLENOID, Latch, Door Release	1
5	96–0000–2506–2	CABLE, Door Solenoid	1
6	96–0000–5190–2	FAN, Charcoal Filter	1
7	96–0000–2111–1	INTERLOCK, Front Door	1
8	96–0000–2593–0	SWITCH, Service	1
9	96–0000–2111–1	INTERLOCK, Rear Panel	1
10	96–0000–3895–8	BOARD, Feeder	1

Figure 8-13. IMAGE MANAGEMENT SYSTEM

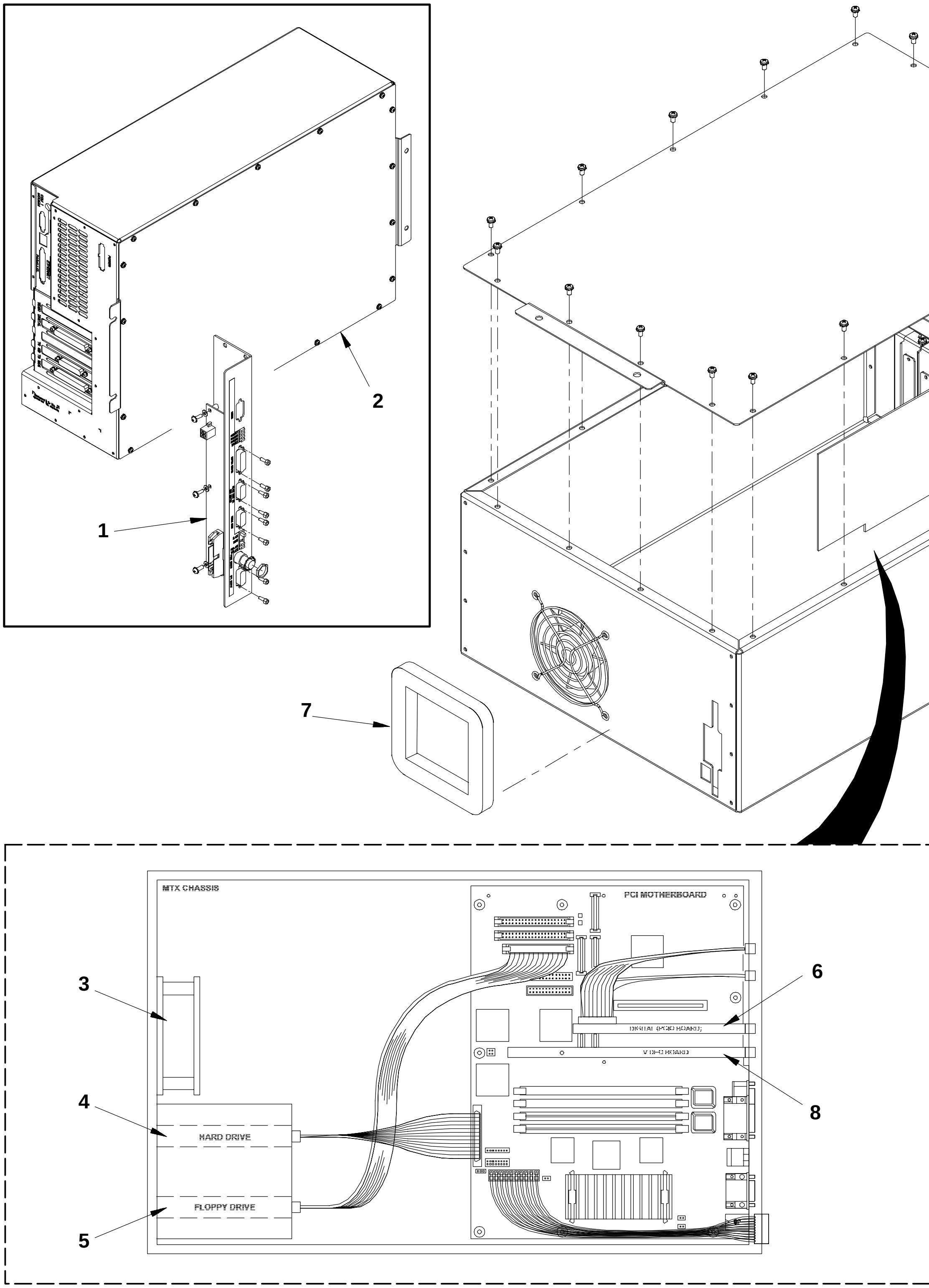


Figure 8-13. IMAGE MANAGEMENT SYSTEM

Item No.	Part Number	Description	Qty
1	96–0000–3912–1	SERIAL INTERFACE BOARD ASSEMBLY	1
2	74–0500–5503–2	PROGRAMMED IMS KIT (Includes items 3 through 7)	1
3	96–0000–3703–4	FAN	1
4	74–0500–5497–7	HARD DRIVE KIT, Programmed	1
5	Not Available	FLOPPY DRIVE	1
6	96–0000–4282–8	PCIO (DIGITAL) BOARD ASSEMBLY	1
7	96–0000–1935–4	SEAL, IMS	1
8	96–0000–2919–7	VIDEO BOARD	1
9	96–0000–3444–5	CABLE, Video Board, 2-wire (Not shown)	1

Figure 8-14. INTERNAL CABLING

Item No.	Part Number	Description	Qty
1	96–0000–2509–6	HARNESS, AC Power	1
2	96–0000–2514–6	CABLE, Interlock, Front	1
3	96–0000–2516–1	CABLE, Interlock, Rear	1
4	96–0000–2515–3	CABLE, Interlock, Top	1
5	96–0000–2513–8	CABLE, Service Switch	1
7	96–0000–2493–3	CABLE, Pickup, FCB	1
8	96–0000–2846–2	HARNESS, Pickup	1
9	96–0000–2401–6	HARNESS, Rollback, Elevator	1
10	96–0000–2848–8	CABLE, Transport, S–MCS	1
11	96–0000–2495–8	CABLE, Feeder, Power	1
12	96–0000–2492–5	HARNESS, FCB, Feed Roller	1
13	96–0000–2496–6	CABLE, Feeder, MicroComm	1
14	96–0000–2518–7	CABLE, Barcode, MicroComm	1
15	96–0000–2499–0	CABLE, IMS Power	1
16	52–0000–5018–8	CABLE, Ribbon, IMS–Modem	1
17	96–0000–2500–5	CABLE, Ribbon, IMS–MCS	1
18	44–0022–7723–2	CABLE, Ribbon, IMS–MPC	1
19	96–0000–2505–4	CABLE, Ribbon, SIB–IMS	1
20	96–0000–2502–1	CABLE, SIB Power	1
21	96–0000–2508–8	CABLE, PIB–MCS	1
22	96–0000–2864–5	CABLE, Ribbon, Platen Optics Module	1
23	96–0000–2497–4	CABLE, Ribbon, MCS–Platen Optics	1
24	96–0000–2402–4	HARNESS, MCS–Platen	1
25	96–0000–2511–2	HARNESS, MCS–Power Supply	1
26	96–0000–2844–7	HARNESS, Rollback Sensor	1
27	96–0000–2874–4	HARNESS, Sensors, Platen	1
28	96–0000–5354–4	HARNESS, MCS–Cherokee Power Supply	1
29	96–0000–2510–4	CABLE, Densitometer, MicroComm	1
30	96–0000–2851–2	CABLE, Exit Sensor	1
31	96–0000–5346–0	CABLE, MCS–RTD	1
32	96–0000–2507–0	CABLE, Transport Sensor	1
33	74–0500–5706–1	CABLE, Network	1

Figure 8-15. EXTERNAL INTERFACES/CABLING

Item No.	Part Number	Description	Qty
1A	78-8077-4178-6	UNIVERSAL KEYPAD ELECT. INTERFACE (UKEIB) (U.S.)	1
1B	78-8077-4269–3	UNIVERSAL KEYPAD ELECT. INTERFACE (UKEIB) (O.U.S.)	1
2A	26-1011-4940-4	POWER CORD ASSY (UL/SCA Rated only)	1
2B	78-8077-4272-7	POWER CORD ASSY (International)	AR
3	78-8075-2572-6	FOOTSWITCH	1
4A	Not Available	KEYPAD, **DryView** 8100	1
4B	22-0001-1189-2	KEYPAD, **DryView** V2	1
5A	78-8053-4697-6	CABLE, Digital, 3 m (10 ft.), Plenum rated	AR
5B	78-8053-4134-0	CABLE, Digital, 10 m (33 ft.), Plenum rated	AR
5C	78-8053-4135-7	CABLE, Digital, 30 m (98 ft.), Plenum rated	AR
5D	78-8053-4139-9	CABLE, Digital, 60 m (198 ft.), Plenum rated	AR
6A	78-8053-4695-0	CABLE, Analog, Coax, 3 m (10 ft.), Plenum rated	AR
6B	78-8053-4059–9	CABLE, Analog, Coax, 10 m (33 ft.), Plenum rated	AR
6C	78-8053-4034-2	CABLE, Analog, Coax, 30 m (98 ft.), Plenum rated	AR
6D	78-8053-4033-4	CABLE, Analog, Coax, 60 m (198 ft.), Plenum rated	AR
7A	96-0000-3444-5	CABLE, Video Board, 2-Wire (For analog modality)	AR
7B	96-0000-3679-6	OCTOPUS CABLE, 8-Channel	AR
8A	78-8053-4646-3	CABLE, RS232, Host Control, 15 ft.	AR
8B	78-8053-4647-1	CABLE, RS232, Host Control, 25 ft.	AR
8C	78-8053-4648-9	CABLE, RS232, Host Control, 50 ft.	AR
9A	78-8053-8455-5	CABLE, RS422, Host Control, 10 m (33 ft.)	AR
9B	78-8053-8456-3	CABLE, RS422, Host Control, 30 m (98 ft.)	AR
9C	78-8053-4672-9	CABLE, RS422, Host Control, 60 m (198 ft.)	AR
10A	78-8075-2603-9	CABLE, Genesis (GE), Host Control, 10 M (33 ft.)	AR
10B	78-8075-2542-9	CABLE, Genesis (GE), Host Control, 30 M (98 ft.)	AR
10C	78-8075-2543-7	CABLE, Genesis (GE), Host Control, 60 M (198 ft.)	AR
11	78-8071-8331-0	CABLE, RS232 to UKEIB Host Control Adapter	AR
12	78-8077-4159-6	CABLE, RS422 Host Control Adapter	AR
13	78-8079-0361-8	CABLE, Siemens Host Control Adapter	AR
14	78-8077-4097-8	CABLE, **DryView** V2 Keypad	AR
15A	78-8063-3964-0	CABLE, KEIB, 10 m (33 ft.)	AR
15B	78-8063-3965-7	CABLE, KEIB, 30 m (98 ft.)	AR
15C	78-8063-3966-5	CABLE, KEIB, 60 m (198 ft.)	AR
16A	78-8094-5482-6	CABLE, Extension, **DryView** 8100 Keypad, 10 m (33 ft.)	AR
16B	78-8094-5481-8	CABLE, Extension, **DryView** 8100 Keypad, 30 m (98 ft.)	AR
16C	78-8094-5480-0	CABLE, Extension, **DryView** 8100 Keypad, 60 m (198 ft.)	AR
17	74-0500-5706-1	CABLE, Network	AR

Figure 8-16. INSTALLATION/MISCELLANEOUS PARTS

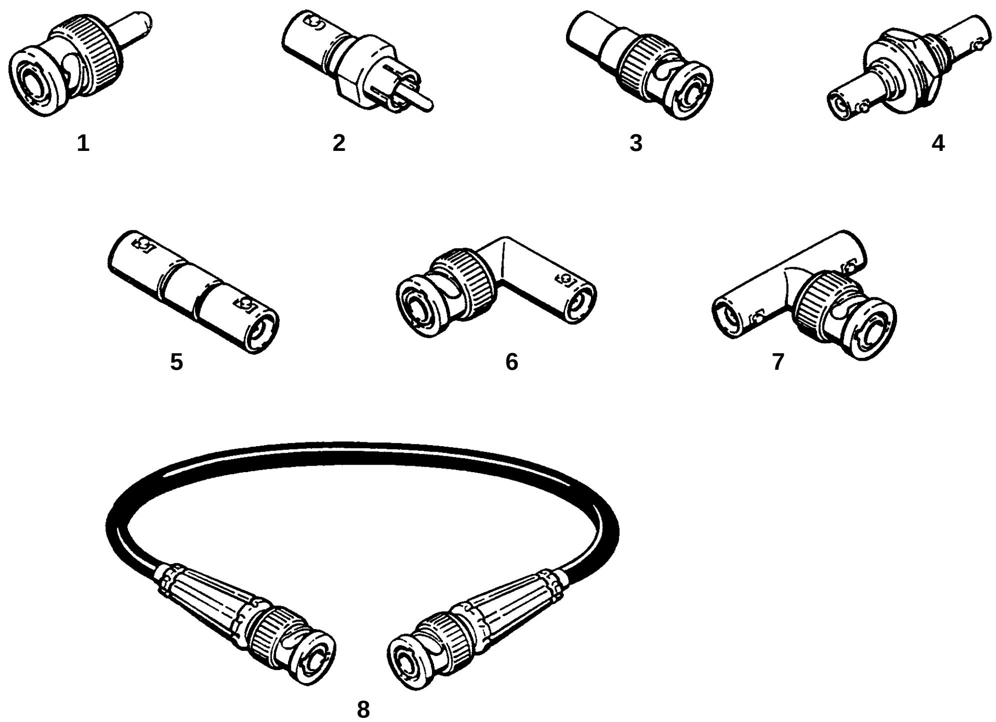


Figure 8-16. INSTALLATION/MISCELLANEOUS PARTS

Item No.	Part Number	Description	Qty
1	26–1008–4885–7	CONNECTOR, BNC Terminator, 75 Ohm	AR
2	26–1008–4883–2	CONNECTOR, BNC Female to RCA Male	AR
3	26–1008–4884–0	CONNECTOR, BNC Male to RCA Female	AR
4	26–1004–2106–9	CONNECTOR, BNC Chassis, Double Female	AR
5	83–1610–0154–6	CONNECTOR, BNC Double Female (Barrel)	AR
6	26–1003–7308–8	CONNECTOR, BNC 90 Degree Female to Male	AR
7	5334TL	CONNECTOR, BNC “T” (2 Female, 1 Male)	AR
8A	78–8068–5622–1	VIDEO CABLE, 18 inch with BNC’s	AR
8B	78–8063–2789–2	VIDEO CABLE, 4 foot with BNC’s	AR
8C	78–8063–2792–6	VIDEO CABLE, 6 foot with BNC’s	AR

Section 9 – Diagrams

9-1. System Functional Diagrams will be supplied in paper form.